1923

SAWARD'S ANNUAL

By FREDERICK W. SAWARD

Compliments of the Author

SAWARD'S ANNUAL

A STANDARD STATISTICAL REVIEW OF THE COAL TRADE

Embracing Details Relative to Output, Prices, Freight and Wage Rates, Transportation, Exports, Trade Conditions, Computing Tables, and Other Details of Importance to the Coal Man, Wholesale and Retail

BY

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SAWARD'S JOURNAL

15 Park Row New York

1923

PRICE, $2.50 PER COPY

FIFTH YEAR

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Coal Production of the United States.

The U. S. Geological Survey has so perfected its system of estimates of coal production that early returns of particular accuracy are now available. We accordingly present the Survey's figures for 1922 as officially announced, showing for comparison the actual output for four preceding years as recorded at Washington.

It will be noted that the production of anthracite is recorded, this being an amount materially greater than the shipments, more commonly used as the basis of trade statistics.

Bituminous	1918	1919	1920	1921	1922
Pennsylvania	178,550,741	150,758,154	168,083,847	116,013,942	104,950,000
West Virginia ...	89,935,839	79,036,553	89,450,707	72,786,996	81,000,000
Illinois	89,291,105	60,862,608	88,630,893	69,602,763	59,100,000
Kentucky	31,612,617	30,036,061	35,528,762	31,588,270	40,100,000
Ohio	45,812,943	35,876,682	45,032,653	31,942,776	26,500,000
Indiana	30,678,634	20,912,288	29,090,585	20,319,509	17,330,000
Alabama	19,184,962	15,536,721	16,140,099	12,568,899	16,100,000
Virginia	10,289,808	9,326,830	11,244,106	7,492,378	11,120,000
Colorado	12,407,571	10,323,420	12,274,225	9,122,760	10,005,000
Wyoming	9,438,688	7,219,738	9,623,271	7,200,666	9,796,000
Utah	5,136,825	4,631,323	6,005,199	4,078,784	4,864,000
Iowa	8,192,195	5,624,692	7,774,916	4,531,392	4,600,000
Tennessee	6,831,048	5,213,205	6,585,628	4,460,326	4,600,000
Kansas	7,561,947	5,224,724	5,838,408	3,466,641	3,100,000
New Mexico	4,023,239	3,138,756	3,683,440	2,453,482	3,100,000
Oklahoma	4,813,447	3,802,113	4,830,288	3,362,623	2,800,000
Missouri	5,667,730	3,979,798	5,266,565	3,551,621	2,700,000
Washington	4,082,212	2,990,447	3,753,093	2,428,722	2,400,000
Montana	4,532,505	3,236,369	4,403,866	2,733,958	2,400,000
North Dakota ...	719,733	840,959	907,625	864,903	1,180,000
Maryland	4,497,297	3,021,686	4,030,239	1,827,740	1,100,000
Texas	2,261,135	1,680,656	1,615,015	972,839	1,000,000
Arkansas	2,227,389	1,429,020	2,050,596	1,227,777	950,000
Michigan	1,464,818	996,545	1,487,765	1,141,715	940,000
Georgia	66,716	53,337	50,156	33,815	
Oregon	13,328	18,739	20,717	*	11,000
California	6,400	6,554	2,753	38,845	
South Dakota ...	7,942	14,417	12,777	7,553	
Total net tons....	579,385,820	465,860,058	563,734,383	415,921,950	407,894,000
Anthracite	98,826,084	88,092,201	89,598,249	90,473,451	52,485,000
Grand total net tons	678,211,904	553,952,259	653,332,632	506,395,401	460,379,000

*Included in California.

Production of anthracite coal in Pennsylvania during calendar year 1922 amounted to 52,505,741 net tons, compared with 88,493,732 net tons during 1921, a decrease of 35,887,991 net tons, or 40.5 per cent. Despite the strike in various unionized fields, bituminous tonnage produced amounted to 118,141,579 net tons, compared with 115,849,814 net tons in 1921, an increase of 2,291,765 net tons, or 1.9 per cent.

REVIEW OF THE YEAR 1922

Great Strikes in Both Anthracite and Bituminous Fields; Substitutes for Anthracite a Feature and Much Coal Imported.

Nearly every year brings us notable developments in the coal trade and 1922 has been no exception. Some years have been marked by great tonnage production, some by high prices, some by low prices; one year in particular was marked by a wonderful export trade being done, but 1922 had the unique distinction of having staged two great strikes. Never before have both the anthracite and bituminous men gone out at one time, but in the year under review, strikes in both fields commenced April 1st. The union members stayed out until nearly five months had elapsed in the case of the soft coal operations, and more than five months in the case of the anthracite operations.

Despite a few unfortunate occurrences, the strikes were remarkably orderly, characterized chiefly by the grim determination that no coal should be mined until the miners' terms were agreed to and in all essential features such was the case.

In the non-union bituminous fields there was great activity, coal production being carried on well up to the capacity of the railroads serving them. As a result, the output for the calendar year was 408,000,000 tons. This compares with 415,921,000 tons for 1921; not far from the same, it will be observed, for in addition to increased activities at non-union mines there was very active work just prior to April 1st in all fields, and as busy conditions as car service would permit following the close of the strike.

Production Showing Poor.

But even though such a figure as was reached in the prior year was attained, to all intents and purposes, within about two per cent in fact, the showing is a very poor one, for ten years before, in 1912, the output of bituminous coal was 450,104,982 tons. In past years we were accustomed to notice a doubling of the output every decade. It will be seen, therefore, how far short of that development we have fallen. It has been said that the 1922 figures compare more favorably with 1921 than might appear on the surface, on account of more coal being used at home by reason of smaller exports. But the fact remains that depressed manufacturing conditions during a good part of the year, economies and substitutions, new methods and principles, have served to put the brakes on the bituminous coal trade and suspended, perhaps forever, the doubling of tonnage every ten years, which it was recognized would have to come to an end sooner or later. At the same time, some moderate growth is only natural and proper, and it is thought that an upward trend will soon develop again. Even though we may never see a yearly increase of ten per cent, for no doubt economies have played their part to a large extent, yet the country will continue to grow.

The year opened with bituminous production at a low ebb, as the

previous year had closed with a much depressed market. Tonnage commenced to climb in anticipation of the strike, which developed promptly on time, April 1st, and was found more comprehensive than expected. One feature was the walkout in certain non-union fields, but only a moderate price improvement developed early in the strike, as considerable accumulation had been accomplished during the preceding weeks.

A year ago it was thought that the smallness of the tonnage gave hope for much improved conditions, but as time went on it was seen that a small amount of coal sufficed. The depression of industry up to a few months ago, the introduction of oil and other features, were recognized as restraints; but not until manufacturing had recovered to a certain extent, and it was seen that there was not the anticipated demand for tonnage, was it realized what economies in coal utilization have been in progress for years past, war-time conditions having given a great impetus to this feature.

Central Power Stations Increase Activities.

Of course, the increased use of oil in many quarters is well-known. Hydro-electric power is also a feature, but more important, perhaps, is the continuing growth of central power-station activities, resulting in power producing at a much lower cost in fuel than can be accomplished at isolated plants.

The demand for soft coal had also been kept down so far as Trans-Atlantic business is concerned, so much a feature in 1920. It is now recognized as a thing of the past, due to our range of prices and European conditions. In fact, there is rather more chance for British coal to come into Boston than there is for us to send coal to Italy, our miners' wages for one thing being more than three times as large per hour as the wages of English miners, and despite all that can be claimed as to greater efficiency through the use of mining machinery, a short working day and so on, it can easily be seen that our cost of production is very high.

With the opening of the strike April 1st, the tonnage fell to 4,000,000 tons in the first week, and climbed slowly from that figure until it recovered to 5,500,000 June 21st. Then, there was a falling off accentuated by conditions arising from the shopmen's strike, which affected the Southern roads in particular and put the tonnage back to about the same level it was on April 1st. After an interval of four weeks it got back to a more favorable figure, and with the resumption of work it recovered to 10,000,000 tons per week in the middle of September, gradually gaining another million tons in the next two months.

English Coal a Predominant Factor.

During the early fall the importation of English coal became a predominant factor of trade comment. It was something that had not been seen on a large scale for sixty years, and in fact the importations that were made were such as were never undertaken or thought of in the days when shipments of coal from the other side were the regular order of business. Boston in particular received many cargoes of British coal.

During all this period the production was fluctuating. Many times an

increase one week would be followed by a decrease the next, and, as stated at the outset, the total for the year will not be far from the total of 1921, while comparison with 1912 shows that the soft coal trade has not grown in the last ten years.

A year ago we referred to the attitude of organized labor and the unwillingness to get down to a normal working basis. This has been seen in more acute form during the past year. We still have to contend with a great deal of inflation, and the net result is not much better than in a low price era, except in the case of a few classes of the population. Others get more but pay more; no net result gained, for savings have only half the value of former years.

The effort made to reduce freight rates and shopmen's wages at the same time was apparently intended as the starting point of a series of reductions, but the freight rate reduction was too small to be noticed on many commodities, and not enough to have any effect even on articles of greatest bulk, while the reduction in shopmen's wages brought about a costly strike, the effects of which will be felt by some roads for weeks or months to come, and no more cuts were ordered.

With so many of the basic figures remaining on a high plane, it has been very difficult to return to normalcy, and coal in particular has remained at high levels compared with rates before the war.

High Taxes a Feature.

High taxes continue to be a feature reflected in part in high rents, which in turn have their effect in causing a need of and a demand for high wages. Readjustment will evidently be the outcome of long-continued developments.

Relative to the course of prices during the year, it can be said that at New York, January, February and March were the low months, five of the most popular pool classifications being quoted at their low figures in January, one in February, and one in March. With the exception of Pool 9—which ranged from $8 to $8.50 f. o. b. the New York piers in May—August and September showed the high points, the market naturally becoming stronger as the using up of stocks on hand progressed, when it was seen that the production from non-union fields had evidently reached its maximum.

One Good Effect.

The strike had one good effect from a trade standpoint: It brought up the wages of the non-union miners and thereby eliminated the great trouble that had existed when high wages prevailed in union districts and low wages prevailed in non-union fields. By establishing a parity, one of the great initial causes of the strike was disposed of.

The demand for tonnage during the period of relative scarcity in the summer also served to equalize matters, but fundamentally the position of union producers is as unfavorable as it was a year ago, as they were not able to change their working arrangements and can still be held to the carrying out of their contracts, while non-union producers can fix a rate of pay above or below the union scale as it may be necessary to compete for business or to compete for men.

The non-union fields certainly gave evidence of their tonnage producing

capability, for though some of them were hampered by a strike as definite as that in union fields, a great tonnage was produced and greater possibilities of output were looked forward to when the shopmen's strike—apparently well staged—came to interfere with movement, on the southern roads especially, in the month of July.

In reviews during past years we have from time to time referred to the relative situation of bee-hive and by-product coke, but apparently the time has passed by when there is any close comparison to be made. The Geological Survey reports an output of nearly 20,000,000 tons of by-product coke in 1921 and only 5,500,000 tons of bee-hive coke. These figures are both much smaller than they were in 1920, when they stood about 30,000,000 tons of by-product and 20,000,000 tons of bee-hive.

In the scarcity of domestic coal resulting from the strikes, the utilization of by-product coke has been a very noticeable and important feature.

Cars Plentiful Enough.

Certainly the notable results secured with the mines working only two or three days a week, as the case may be, must cause the careful observer to consider what would be the result were plenty of cars provided so as to permit a full run at the collieries every day in the week.

The U. S. Coal Commission estimated that the result would be a billion tons of production annually. This of course is far in excess of any demand that has ever been known, nearly twice the greatest annual output ever achieved. Even 20,000,000 tons per week for a few weeks would soon have broken the strongest market ever experienced by the soft coal people. In fact, production at the rate of more than 12,000,000 tons weekly for a few weeks broke the stringency prevailing in the fall of 1920, when there was a situation so acute that a national conference of coal producers was held at Cleveland by invitation of the Government in order to adopt measures to speed up production to relieve the situation that then prevailed.

It will be recalled that the Commission, in reviewing the primary causes of trouble in the soft coal trade, declared that no new mines were needed and urged that capital should not go into soft coal mining. Certainly the providing of production facilities has been overdone, but the country will in time grow up to the present-day capacity. How long it will take is uncertain. Under the old-time basis of a doubling of the trade every ten years, it would not take long. A single decade would change the situation wonderfully. Now some say thirty or forty years would be required, but this does not take into consideration the fact that some mines are being worked out every year and the tonnage of others is reduced by reason of their continued activity.

So, what with the growing needs of the country over a term of years and the exhaustion or depletion of the mines of today, a satisfactory readjustment may be brought about sooner than many anticipate if we have a cessation of new developments.

The Year in Anthracite.

The anthracite trade during 1922 had nearly seven months of active conditions and something more than five months of the most complete sus-

pension the industry has ever known. In pursuance of plans definitely announced well in advance, the miners suspended work throughout the hard coal fields April 1st, and while many estimates were made as to probable duration of the difficulty, most of them short, it was seen once more that the miners of the hard coal fields can, apparently, always maintain themselves for a period of six months when they go out with a full spirit of determination.

For the first time in history an acute shortage followed the hard coal strike, something far more noticeable than in 1902, and special arrangements concerning distribution, rationing and the use of substitutes were enforced officially by legislative decree and otherwise. In the past 20 years the country has grown and there is less excess capacity at the hard coal mines than there was then. Twenty years ago there was practically no difficulty after the close of a mild fall season, and, as will be recalled, the market broke badly in January of 1903.

Shortages are too prevalent at time of writing to require any comment as to present-day conditions in that respect. There was a complete cleaning up of stocks during the summer, including supplies of small coal that had been on the ground for a long time, and the situation seemed so promising in September that an increase in the price of steam sizes was announced. The latter, however, soon became a drug on the market as a result, perhaps, of the stagnation in bituminous coal following a buyer's strike.

There is nothing new of an official character in regard to the re-sizing of anthracite, except in the case of one company, but it is thought that there is a tendency in some quarters to run smaller sizes than was the case some years ago. This is accomplished without disadvantage to the public. Less washery product is coming to market than was forwarded 20 years ago for the very good reason that culm banks containing good coal with a fair proportion of the larger sizes are much less numerous than they formerly were. When coal recovery by washery methods was introduced upwards of 30 years ago, it was realized that it would be a comparatively short-lived business and such has proved to be the case.

Company Prices Little Changed.

As usual, the large companies pursued a very conservative policy in regard to price and the fluctuations of the anthracite market were chiefly in regard to independent prices. The low prices of the year were recorded in January and February, with the exception of rice and barley which had a sinking spell in November, following previous strength. The high prices of the year were all quoted in October, even in the case of barley, the market for that moving from high to low in a month's time.

The variation in prices was particularly noticeable at the conclusion of the strike. Company figures of prepared coal were in the neighborhood of $8.10 to $8.25 for stove. The larger independents charged about $9.25 to $9.50, while certain of the smaller independents charged from $10 to $13.50 or even $14.

With an acute situation prevailing on account of domestic sizes at the end of the year, high prices continue to be quoted by certain interests, but

steam coal prices, starting off on a fair level in anticipation of lack of competition from soft coal, went very low about the first of October, and from the commencement of the fall season until very recently small sizes have been a drug on the market.

With domestic sizes loaded with as great a share of the cost of production as they can bear, and in view of the high freights and the present-day cost of distribution at retail, the successful handling of the smaller sizes is a great problem, for naturally they carry a higher percentage of ash and other refuse than do the prepared sizes, yet freight and distibution costs are practically the same. Because of this fact, the mine price difference is much reduced proportionately at the more remote places of consumption, closely limiting the market for steam sizes.

Mild Weather a Great Help.

Mild weather has helped the situation very much, just as it did in 1902. Many unfavorable and unpleasant circumstances have developed but the situation would have been much worse if severe weather had prevailed early in the fall and subsequently. As it is, people have been able to get by through the substitution of bituminous coal, by economies and by the use of other substitutes, and there is quite a question as to what the permanent effect on the anthracite trade will be, especially in view of the considerable number of important consumers who went over to soft coal in Boston in the season of 1902-'03.

Altogether, in closing the year's review, it can be said that one of the remarkable things has been the way in which the country got enough coal to keep going notwithstanding poor condition of the railroad equipment. The railroads have had difficulties for years past and predictions were freely made as to a great traffic jam in the fall because of their inability to meet the situation.

But, through the falling off of grain shipments to Atlantic ports and the moderate weather that the country has been favored with, the results accomplished were more than expected. The fact remains that there has been close calculation needed to achieve the results showed and some improvement in the railroad situation must develop sooner or later if the country is to keep up with requirements.

A Bushel of Coal.

The weight of a bushel of coal is:

In Indiana	70 lbs.
In Pennsylvania	76 lbs.
In Alabama, Colorado, Georgia, Illinois, Ohio, Tennessee and West Virginia	80 lbs.

A net ton (2,000 lbs.) would contain the following:

In Indiana	28.57 bushels
In Pennsylvania	26.32 bushels
In Alabama, Colorado, Georgia, Illinois, Ohio, Tennessee and West Virginia	25.00 bushels

MONTHLY BITUMINOUS PRODUCTION

Bituminous coal produced in the United States, by months, 1913-1922 inclusive, in net tons, was:

Month	1913	1914	1915	1916	1917
January	42,276,000	40,188,000	37,190,000	46,596,000	47,967,000
February	37,057,000	35,472,000	29,321,000	45,187,000	41,353,000
March	37,536,000	45,455,000	31,801,000	43,827,000	47,869,000
April	34,169,000	23,609,000	29,968,000	33,628,000	41,854,000
May	37,205,000	28,551,000	30,938,000	38,804,000	47,086,000
June	37,405,000	31,412,000	33,957,000	37,742,000	46,824,000
July	38,858,000	34,305,000	35,573,000	38,113,000	46,292,000
August	41,590,000	37,751,000	38,161,000	42,696,000	47,372,000
September	41,424,000	39,019,000	40,964,000	42,098,000	45,108,000
October	46,164,000	37,685,000	44,198,000	44,807,000	48,337,000
November	43,233,000	33,392,000	44,737,000	44,927,000	47,690,000
December	41,519,000	35,862,000	45,814,000	44,098,000	44,037,000
Total	478,436,000	422,701,000	443,572,000	502,523,000	551,789,000

Month	1918	1919	1920	1921	1922
January	42,227,000	42,193,000	49,748,000	41,148,000	37,489,000
February	43,777,000	32,103,000	41,055,000	31,524,000	40,856,000
March	48,113,000	34,293,000	47,850,000	31,054,000	49,976,000
April	46,041,000	32,712,000	38,764,000	28,154,000	16,000,000
May	50,443,000	38,186,000	39,841,000	34,057,000	20,601,000
June	51,138,000	37,685,000	46,095,000	34,635,000	22,624,000
July	54,971,000	43,425,000	45,988,000	31,047,000	17,147,000
August	55,114,000	43,613,000	49,974,000	35,291,000	27,538,000
September	51,183,000	48,209,000	50,241,000	35,870,000	39,413,000
October	52,300,000	57,200,000	53,278,000	44,687,000	44,907,000
November	43,895,000	19,006,000	52,576,000	36,805,000	45,103,000
December	40,184,000	37,235,000	53,257,000	31,650,000	46,240,000
Total	579,386,000	465,860,000	558,667,000	415,922,000	407,894,000

Coal and Coke Exports from Buffalo.

Month	Anthracite		Bituminous		Coke	
	1921	1922	1921	1922	1921	1922
January	174,718	148,043	502,577	233,458	15,786	5,472
February	164,655	164,254	273,735	387,923	10,164	8,597
March	207,473	198,084	304,418	425,836	12,266	6,749
April	194,494	49,270	213,907	117,221	6,502	4,021
May	192,638	22,702	189,629	41,192	5,132	6,411
June	249,943	21,522	197,977	65,725	5,578	4,384
July	202,555	9,478	200,614	58,749	5,063	2,778
August	193,493	18,115	188,217	162,400	5,873	6,739
September	161,006	41,948	180,664	233,036	5,323	10,743
October	159,824	198,096	243,326	284,352	8,192	20,802
November	184,541	174,636	226,673	293,113	8,185	24,576
December	176,046	187,583	204,926	387,836	6,023	85,545
Total	2,161,386	1,133,732	2,926,663	2,690,841	94,087	176,817

THE YEAR'S RESULTS AT NEW YORK

Coming in Like a Lamb, 1922 Went Out Like a Lion as a Result of Strikes and Other Developments Affecting Supply and Demand.

In the anthracite trade 1922 has greater historic interest than any other year with one possible exception. Because it witnessed the second Big Strike, it will at least take equal rank as a landmark with 1902 and may overshadow the earlier year in that respect. The two strikes were of almost equal length, each lasting about 23 weeks, but in the 20 years that separated them the country's requirements had grown materially while productive capacity at the anthracite collieries had increased but slightly, if at all. For that reason the recent tie-up has had more serious results than the one early in the century, and they will continue to be felt longer.

Present conditions contrast strangely with those of a twelvemonth ago. In December, 1921, many of the anthracite collieries worked part time because of a dull market. This curtailment was continued during January, though the demand picked up towards the end of the month. It was well along in February before there was business enough to enable all the mines to run steadily. By the first of March the volume of buying was quite heavy in anticipation of the strike, although demand did not take on any great urgency even in the closing days of the month. Producers had unfilled orders on their books when the tie-up began, but dealers were averse to paying big premiums in order to assure prompt shipment of independent tonnage.

The strike lasted from April 1st to September 11th and was 100 per cent effective so far as mining operations were concerned. Nothing was shipped to market during that period except coal from company stocking plants and a small tonnage of steam sizes from river washeries. The companies had several million tons in stock, but it was almost entirely pea coal and smaller.

Many consumers refused to have their bins filled during the spring, believing that the strike would not amount to much and would be followed by lower prices. Retailers were also cautious about loading up too heavily, the general opinion being that the trouble would be over in a month or two and that the miners would be forced to accept a wage reduction. Furthermore, a cut in freight rates was being agitated, and to avoid a possible loss the average dealer "played safe," as he called it. By the time September 11th arrived all retail yards were bare except for a small amount that was being reserved for commercial users. Company stocking plants were also empty, save for a few odds and ends.

Developments since the strike are too fresh in mind to need any great elaboration. The only bright features have been that production got back to normal quicker than was anticipated and that the months of October and November were slightly warmer than usual. As a result things did not reach a really acute stage until after December 1st. By that time there had been enough coal-burning weather to deplete the meager stocks accumulated by consumers before or after the strike, and their demands, added to those of people who had never had any reserve supply and were depending on daily deliveries, swamped the retail trade entirely. Substitutes, such as bituminous coal and coke, had to be resorted to on a scale never before seen in the East.

Course of Bituminous Market.

Someone once said that the ups and downs of the bituminous trade reminded him of a man who spent alternate seasons at Palm Beach and in the poorhouse. When 1922 dawned the industry was in the poorhouse, figuratively speaking, and some of its members were on the verge of going there physically if their remarks were to be taken at their face value. The year closed with an entirely different state of affairs prevailing, as a result of developments both within and without the trade. Demand is active, prices are up 100 per cent, prosperity has succeeded adversity, and pessimism has given way to confidence.

In December, 1921, production had been ranging between 7,000,000 and 7,500,000 tons a week, but with the advent of 1922 an upward trend became noticeable. Consumption was increasing as a result of the industrial revival then in its early stages. Moreover, stocks had been allowed to run down and consumers were anxious not only to get them back to normal, but to pile up an extra reserve to see them through the threatened strike. The buying movement gained force steadily, until early in March the mines were turning out 11,000,000 tons weekly.

But while the volume of business expanded, prices improved very little in the period between January 1st and April 1st. So many mines were idle, and so many working part time, that whenever the market showed signs of stiffening a flood of new tonnage made its appearance and the rise was checked before it had gone far. This happened two or three times during the first quarter, and the net result was that prices on April 1st were almost exactly the same as three months earlier. On both dates Pool 9 coal was quoted at $2.15-$2.40, mines, and other grades had not changed materially.

With the commencement of the strike, tonnage dropped to under 4,000,000 weekly and prices began to strengthen. By May 1st they were up about a dollar all around. For the next three weeks the upward movement continued until by the 20th coal from non-union operations in central Pennsylvania and northern West Virginia was bringing from $4.25 to $5.00 a ton. Then the Government stepped in and tried to regulate prices, and consumers held off in the hope of getting cheaper coal. This caused a reaction which continued into June, when another brief flurry occurred, only to be followed by a second reaction. These fluctuations continued until the second half of July, when a runaway market carried prices up to $8.00 or more by the end of the month.

Then a rush to buy British coal set in and during August tonnage from England and Wales started moving this way in heavy volume. Another unusual feature was the large movement of Pocahontas and New River coal to New York via water from Hampton Roads. This started before the strike began, but did not attain its height until the union mines which normally supply the bulk of the coal coming to this market had been tied up by labor troubles.

With the ending of the strike in late August prices began to slump. While stocks at many consuming plants were in need of replenishing, buyers held off as much as possible in anticipation of a break in the market, and their attitude served to give impetus to the downward movement. For the next two or three months they continued to take in tonnage only as needed. In November, however, prices began to firm up and by the first of December they were definitely on the upgrade.

NEW YORK ANTHRACITE PRICES, F. O. B. MINES, 1922.

	Jan.		Feb.	
	Ind.	Co.	Ind.	Co.
Broken	.....	$7.60-$7.75	.....	$7.60-$7.75
Egg	$7.00-$7.35	7.60- 7.75	$7.25-$7.75	7.60- 7.75
Stove	7.85- 8.00	7.90- 8.10	7.75- 8.10	7.90- 8.10
Chestnut	7.85- 8.00	7.90- 8.10	7.85- 8.10	7.90- 8.10
Pea	4.25- 4.75	6.05- 6.45	5.00- 5.50	5.75- 6.50
Buckwheat No. 1	2.25- 3.00	3.50	3.00- 3.50	3.50
Rice	1.75- 2.00	2.50	2.00- 2.50	2.50
Barley	1.35- 1.60	1.50	1.50- 1.75	1.50

	Mar.		Apr.	
Broken	.....	$7.60-$7.75	.....	$7.60-$7.75
Egg	$7.35-$7.75	7.60- 7.75	$7.75-$8.00	7.60- 7.75
Stove	7.85- 8.10	7.90- 8.10	8.10- 8.25	7.90- 8.10
Chestnut	7.90- 8.10	7.90- 8.10	8.10- 8.25	7.90- 8.10
Pea	4.50- 5.50	5.75- 6.45	5.25- 5.75	6.00- 6.45
Buckwheat No. 1	3.00- 3.50	3.50	3.00- 3.50	3.50
Rice	2.00- 2.60	2.50	2.00- 2.50	2.50
Barley	1.50- 1.75	1.50	1.50- 1.85	1.50

	May		June	
Broken	.....	.....	.....	.....
Egg	.....	.....	.....	.....
Stove	.....	.....	.....	.....
Chestnut	.....	.....	.....	.....
Pea	.....	.....	.....	.....
Buckwheat No. 1	.....	.....	.....	.....
Rice	.....	.....	.....	.....
Barley	.....	.....	.....	.....

Strike — Strike

	July		Aug.	
Broken	.....	.....	.....	.....
Egg	.....	.....	.....	.....
Stove	.....	.....	.....	.....
Chestnut	.....	.....	.....	.....
Pea	.....	.....	.....	.....
Buckwheat No. 1	.....	.....	.....	.....
Rice	.....	.....	.....	.....
Barley	.....	.....	.....	.....

Strike — Strike

	Sept.		Oct.	
Broken	$9.00	$7.75	.....	$7.75-$8.15
Egg	9.25	7.75	$9.25-$12.00	7.75- 8.35
Stove	9.25	8.00	9.25- 12.00	8.00- 8.35
Chestnut	9.25	8.00	9.25- 12.00	8.00- 8.35
Pea	6.75	6.15	6.55- 8.00	6.15- 6.20
Buckwheat No. 1	5.50-$6.50	4.00	3.00- 4.00	4.00- 4.25
Rice	3.50- 4.00	3.00	2.00- 3.00	2.75- 3.00
Barley	2.50- 3.00	2.00	1.25- 2.00	2.00

	Nov.		Dec.	
	Ind.	Co.	Ind.	Co.
Broken	$9.00	$7.75-$8.15	$9.00	$7.75-$8.15
Egg	9.25-$13.00	7.75- 8.35	9.25-$15.00	8.00- 8.35
Stove	9.25- 13.00	8.00- 8.35	9.25- 15.00	8.00- 8.35
Chestnut	9.25- 13.00	8.00- 8.35	9.25- 15.00	8.00- 8.35
Pea	6.20- 9.00	6.15- 6.20	7.00- 11.00	6.15- 6.30
Buckwheat No. 1	3.25- 4.00	4.00- 4.25	3.50- 4.75	3.50- 4.25
Rice	1.60- 2.75	2.75- 3.00	2.50- 2.75	2.50- 3.00
Barley	.75- 1.50	2.00	1.50- 2.25	1.50- 2.00

Freight rate on anthracite domestic sizes from mines to New York Harbor lower ports for first half of year was $2.61; from July 1st when reduction was made the rate has been $2.34 per gross ton. On other sizes, pea and smaller, the freight rate up to June 30th was $2.47; from July 1st $2.22 per gross ton. Rate to upper ports five cents higher.

New York Spot Prices, 1922, F. O. B. Mines, Net Tons.

	Jan.	Feb.	March	April
Pool 1	$2.75-$3.25	$2.75-$3.25	$2.75-$3.15	$3.00-$3.75
9	2.15- 2.30	2.00- 2.75	2.20- 2.65	3.00- 3.50
10	1.80- 2.10	1.90- 2.25	1.90- 2.15	2.50- 3.00
11	1.65- 1.80	1.65- 1.90	1.60- 1.85	2.50- 3.00
54	1.35- 1.50	1.40- 1.60	1.50- 1.65	2.75- 3.00
64	1.35- 1.50	1.40- 1.60	1.50- 1.65	2.75- 3.00

	May	June	July	Aug.
Pool 1	.....	$4.25-$4.50	.....	.....
9	$4.25-$4.50	3.90- 4.15	.....	.....
10	4.25- 4.50	3.75- 3.90	$4.75-$4.90	$7.75-$8.50
11	4.00- 4.25	3.40- 3.65	4.50- 4.75	7.50- 7.75
54	4.00- 4.25	3.50- 3.85	4.50- 4.90	7.50- 7.75
64	4.00- 4.25	3.50- 3.85	4.50- 4.90	7.50- 7.75

	Sept.	Oct.	Nov.	Dec.
Pool 1	$5.00-$5.75	$4.75-$5.75	$4.75-$5.00	$5.00-$5.50
9	4.50- 5.00	4.35- 5.00	4.15- 4.30	4.50- 4.75
10	4.25- 4.50	4.00- 4.25	3.25- 3.75	3.75- 4.25
11	4.00- 4.25	3.25- 3.75	2.75- 3.25	3.00- 3.50
54	4.25- 4.50	3.75- 4.00	3.35- 3.60	2.60- 3.00
64	4.25- 4.50	3.75- 4.00	3.35- 3.60	2.60- 3.00

While the manufacture of pins would probably not strike most people as being an industry requiring much power, statistics recently published show that the 92 pin factories in the country burn about 26,000 tons of coal annually, besides 2,500 barrels of fuel oil and 27,000 cubic feet of gas. They employ 10,000 persons and produce approximately ten billion pins or 2,000 tons.

YEAR 1922 AT PHILADELPHIA

Tempestuous Experiences for All Connected with Anthracite Trade—Bituminous Consumers Indifferent Greater Part of Time.

The year 1922 in the anthracite trade was a very tempestuous one for all, but particularly the retailers. From the first of the year there was a general feeling that a strike was imminent, yet in very mid-winter there was a market break, due mostly to mild weather. At any rate, the dealers could buy coal from any shipper, so plentifully was it to be had. The consumer bought moderately, as he had become imbued with the idea that he should carry no coal into spring because prices were certain to be lower. Some dealers actually advised consumers in accordance with the above, and played it that way by stocking little coal themselves.

However, many dealers stocked close to capacity by April 1st and for a while many had thought they had guessed wrong, but as summer wore along they moved every pound of coal, and by July 1st every one was after more. It is a matter of record now that the strike lasted from April 1st to September 11th, a total of 164 days, and the effects of the shortage are likely to be apparent right up to the beginning of the next coal year.

By mid-summer with the end of the strike nowhere in sight certain elements in the trade began buying from the retailers, with the result that the heavy storage stocks of pea coal held by the companies began to move. While at first the buying was only moderate, as September was reached the heavy tonnages thus held were about wiped out and the trade was calling for more. It was also seen by mid-summer that serious conditions were sure to ensue due to the lack of production for such a long period and in order to ensure careful distribution of the output when mining should be resumed the governor appointed a fuel commission, whose efforts to supervise distribution and prices was heartily entered into by all elements of the business.

Tax Law Constitutional.

One of the important happenings of the year was the handing down of the opinion of the U. S. Supreme Court declaring the State coal tax law as constitutional. Another event of importance, and which really had a direct effect on the trade, was the lowering of freight rates as ordered by the I. C. C. and which became effective July 1st. The public for many months had expected a lowering of rates and this was one of the reasons why they had delayed purchasing coal in the spring when it could still be had. The freight rate reduction amounted to about 23 to 30 cents a ton.

After the resumption of mining at the end of the strike September 11th this market was slow to receive coal in the amount needed, and every one hoped that with the closing of the lakes, late in the fall, conditions would become better. However, when that time arrived the weather conditions were also somewhat severe at times and as a result there was far from enough anthracite to go around. Finally the trade began to accept buckwheat as a domestic fuel, and later heavy quantities of soft coal and coke were sold by the retailers.

Inasmuch as the miners' agreement is only to work until the end of next August, the trade generally is looking forward to an extremely busy summer in

1923 From this point it looks as though the public having learned its lesson of waiting for low price coal, will instead, in the face of more trouble, be glad to take coal all summer long and thus avoid the difficulties of the winter of 1922-23.

Bituminous Trade Unsatisfactory.

If the anthracite trade was unsatisfactory to those engaged in it, even more so was the bituminous year ending with December 31st. In a similar way this market was harassed by the long strike, but in addition when mining was resumed they suffered extremely from the lack of cars, so that the production was always a few steps behind the demand.

The bituminous consumer from the beginning of the year was possessed with the idea of much cheaper coal, even though in the fore part of the year the range for all pools ran from about $1.75 to $3.15. So firmly fixed was this idea, abetted by the probability of a freight rate reduction, that the consumer would buy but meagerly for current consumption only. The producers of non-union coal were strongly of the opinion that they could mine enough coal to take care of the demand and this further fortified the consumer in the desire to stay out of the market.

However, this was made without reckoning on the possibility of a general business resumption, which actually developed into a reality about, at least in the iron trade, during May. This created strong competition for the output and prices mounted up until they reached about $6. At this point Secretary Hoover, representing the Department of Commerce, came in and lent his influence to a price regulation plan, which did lower prices, some operators agreeing upon a $3.50 basis.

Further hindrance to production developed with the onset of the shopmen's strike on the railroads, which for a time almost entirely eliminated production and from the effects of which the trade has not entirely recovered at this time. This gave an opportunity for foreign coals to find a market here, which they did for several months at prices running from $6 to $10 a ton delivered.

The strike finally wore itself out commencing with the Cleveland agreement, by which the men went back to work at the old scale until April 1st next, which would seem to spell trouble all over again. Yet despite all these signs the consumer right from the time production once more began persisted in the attitude of waiting out the market for cheaper coal and only buying as needed. As a result of this condition, even though production was light, prices for spot coal sagged down during the fall, despite the warning of producers that it was a good time to buy.

This condition continued into November, when with increased consumption, due to the arrival of seasonal weather, the buyers began to come into the market for prompt deliveries and when they found that coal was not forthcoming immediately prices once more tightened and moved upward. In December there was close to a scramble on the part of some buyers to get coal and near the end of the year quotations were reaching close to the highest of the year.

Production of Belgian coal mines in 1922 totaled 21,232,170 tons against 21,750,410 in 1921, 22,388,770 in 1920, 18,482,880 in 1919, and 22,841,590 in 1913. In only four months was production up to 1921 average, January, March, October and December.

YEAR'S TRADE AT BOSTON

In 1922, a Year of Recovery, Spot Bituminous Coal Advanced $1—Strike Detriment Overcome by British Imports.

A year in which a long strike occurs, affecting both the bituminous and anthracite production, is bound to be an unusual year—and 1922 was such. It was a year of recovery, in an industrial sense, as compared with 1921 which was a year of depression. It was also a year in which prices rose steadily, being lowest in January and reaching a peak in December, a course practically opposite from the 1921 price trend, which was downward all year.

At the start of the calendar year, prices for bituminous were at what proved to be the low for the next 12 months. Had comsumers been able to visualize the meaning of the developments at that time, all of them pointing unmistakably to a miners' strike, there is no doubt but that there would have been heavy buying and considerably higher prices. Coal at $6 gross ton on cars Boston in the light of subsequent events was decidedly cheap.

In early January, receipts at Boston were rather light and purchasing was equally light. It was thought that buyers had been waiting until after the first of the year in order to keep their inventories as low as possible as of December 31st and that considerable purchasing would make its appearance. But this factor was overemphasized. Prices remained around $6.10 to $6.25 gross ton level at Boston the entire month.

Another factor that made for a sluggish market was the mild weather. The thermometer registered temperatures that spoke more of coming spring rather than of the thick of winter still to come, with rain in the middle of the month. This, together with the facts that stocks of coal in the hands of large consumers were fairly substantial, combined to produce a buyers' market.

Prices at Norfolk remained in the vicinity of $4.75 all the month, and bottoms could be had from 90 cents to $1.35. Pennsylvania coals of a quality labeled pool 1 sold $2.75 to $3.00 and pool 9 at from $2.20 to $2.50, pool 10, $1.90 to $2.15 and pool 71 at $2.25 to $2.40.

Colder weather was ushered in toward the end of January and in February a period of brisker business became evident. Buyers began to feel that the possibility of a strike loomed more threateningly and numbers of large industrials and public utilities increased their purchasing. Shippers exhibited a more optimistic attitude, since prices started to stiffen. Bids on coal for the State of Massachusetts were 15 to 20 cents higher than the spot market averaged the month before and the best bituminous on cars Boston ranged from $6.25 to $6.40 gross ton and some sales were recorded at $6.50.

Vessel Rates Strengthen.

Vessel rates strengthened about this time, prices per ton for the smaller boats going to $1.35 a ton, due to severe weather on the Atlantic, which caused a backing up of soft coal at Hampton Roads. Pennsylvania coal did not change materially during the month, pool 1 remaining around $2.75 to $3.00 and medium qualities around $2.40 to $2.50.

In March a fair business was reported, though there did not seem to develop any urgent buying. In fact many shippers stated that consumers were distressingly indifferent to the growing nearness of widespread miners' strike. Warnings were broadcast from various sources by government officials, chambers of commerce and trade and outside factors. The Massachusetts Fuel Administrator sent out a public announcement touching upon expected results of the strike.

Another reason for the indifferent buying was the closing down of most of the cotton mills due to a rather bitter wage quarrel. These mills consume a substantial part of New England's total requirements, despite the fact that so many of them are run by water power. However, buyers felt undoubtedly, that the West Virginia mines would continue to produce even if the strike was prolonged. Coal arrived in plentiful supply and hence there was some easing in price to about $6.25 gross ton on cars Mystic level. Toward the end of the month, the feeling was that as long as a strike must be endured, it was as good a time to come as could be picked out.

With the inauguration of the coal strike, and no signs of anxiety on the part of consumers, it became evident that despite the apparently backward purchasing in the previous three months, large corporations were well stocked for the struggle. As April progressed and no rush to buy developed, this conclusion was borne out. Prices continued at the $6.25 on cars level practically to the end of the month, with, of course, minor fluctuations.

Sudden Changes in May.

In May, however, there began a sudden change in the spot price market, spot price jumping almost overnight 50 cents for both the Southern and the Pennsylvania product. This jump was not due to increased demand in New England, but to competitive bidding for the West Virginia production by Western and Mid-Western interests and also to a fear on the part of shippers that they would not be able to replace stocks in their hands. This advance was followed by a further one within a few days, driving the Boston-on-cars-price to $7.00 gross tons and then to $7.50.

By the end of the month the price had climbed to $8.50 on cars, though some of the buyers stated that this price was largely nominal, as they could get fuel considerably under that quotation. Buying was of an indifferent nature, nevertheless, apparently restricted by Hoover's announcement that he intended to stabilize the price at the mine. The prices eased 25 to 50 cents.

With the Hoover announcement of a $3.50 net ton price at the mine for New River and Pocahontas coal, prices stiffened again, to the old level of $8.25 to $8.50. Pennsylvania coals also kept pace with the West Virginia product, pool 1 quality touching $4.25 net ton mines.

Throughout the greater part of June and up to the middle of July, spot prices stood somewhat under the levels reached at the end of May—that is, they hung around $7.75 to $8.25. About the 15th, however, a shortage began to be felt and a sudden advance boosted the price at Mystic to the $8.50 and $8.60 level, with a subsequent increase the following week to $9.00, then to $9.50.

Before buyers realized it, an actual scarcity was noted in New England ports, and $10 coal on cars was a reality. The reason for this very drastic change in an otherwise featureless market, was the transportation situation. The strike of the

shopmen was a powerful ally of higher prices. Pennsylvania coal leaped likewise, with Pool 1 unable to be procured, and Pool 10 going to $5.50 and $6.00 net ton mines.

British Coal Arrives.

A sellers' market was in evidence at the beginning of August. British coal was arriving in substantial amounts. The spot market leaped still further, prices at Providence going to $11.00 on cars and then to $12.00 with $14.00 quotations at New Haven. Little business was done, however, as stocks could not be readily replaced. Norfolk prices ranged up to $10.50 f. o. b. Hampton Roads and British coal sold near $11.00 gross tons on cars Boston.

The third week in August found quotations at Mystic as high as $13.00 gross tons on cars Boston, though this dropped off toward the end of the month to $12.00. Early in September, quotations fell off again and dullness began to be remarked. Consumers felt that prices must drop and that $11.00 and $12.00 coal was too high. A decided easing took effect and about the 20th, good coal was offered at $10.00 gross ton at Boston and $9.50 to $9.75 on cars Providence.

Toward the end of September, prices were steadily softening. Buyers took the attitude that with increasing production in the unionized fields and heavy imports of foreign coal, lower prices were inevitable. This attitude was borne out by quotations of around $9.00 to $9.25 on cars Boston. British admiralty coal sold for $7.50 to $7.75 alongside and Pool 1 Pennsylvania at $6.25.

In early October, spot prices broke below $9.00 and the middle of the month saw prices of $8.50 gross ton on cars Mystic, evidenced by bids on 32,000 tons of State coal. With slight variations, prices here remained in the neighborhood of $8.75 until about the third week in November, when they advanced to $9.00 and $9.25 on cars. Pennsylvania coal sold at $5.25 net ton mines for Pool 1, $4.50 to $4.75 for Pool 9 and $3.75 to $4.25 for Pool 10.

In the last month of the year, spot bituminous started at $9.00 gross ton and due to somewhat colder weather, and increased operation of New England industries, advanced steadily until the closing week of 1922 prices of Southern coal were firm around $10.00 to $10.25. Car shortage also played a part in this advance. Pennsylvania coals showed a tendency to stiffen after a temporary easing. Pool 1 was quoted at $6.00 to $6.50 net ton mines with Pool 9 selling $5.00 to $5.50 and Pool 10, $4.50 to $5.00. English coal kept arriving in December though in decreasing quantities. A good deal of bituminous coal was disposed of by retailers as substitute for anthracite and in November and December, this buying by householders accounted for no inconsiderable tonnage.

Anthracite.

The year in anthracite is a recital of consumers' indifference while supply is plentiful followed by consumers' anxiety when the supply is cut off and price begins to mount. January prices of $7.90 to $8.15 on stove, $8.00 to $8.25 on nut and $6.25 to $7.75 on egg and pea, $4.50 to $5.50 did not change much until the last week in March, when the nearness of the threatened strike caused consumers to take thought of the morrow with the consequence that there was a decided advance. "Independent" nut ran up to $8.50, egg to $8.25, stove to $8.50 and pea to $5.75 and $6.00. Following this upward spurt came an easing to prices in line with the company circular of $8.10.

There was little change in April or May, independents having very little coal on hand and householders' demand being practically nil. The Massachusetts fuel administrator's report showed that on April 1st, dealers in the State had on hand approximately 800,000 tons of anthracite.

In May, little anthracite was to be had, but what was available sold $8.50 to $8.75 for egg and $8.35 to $8.60 for nut. If independents could have obtained coal in quantity, they would not have been able to dispose of it.

June saw a continuation of the "status quo," with retailers resting on their oars and only pea coal available. In July a substantial portion of the thinking population began to buy such hard coal as was available, foreseeing an unwelcome shortage. Retailers rationed out the limited stocks and independent prices kept increasing.

August and September saw no particular developments affecting the anthracite supply, though independent prices had been rising until certain shippers were offering egg, stove and nut at $13 gross ton mines and pea at $9.00 for shipment when the mines resumed. Birdseye was quoted at $2.75 f. o. b. mine, buckwheat $5.00 to $5.50 and pea $10.00.

Egg, stove and nut was quoted around $12.00 gross ton mines in October and one large independent here was offering those sizes at $11.75, but with each lot of those sizes the dealer was obliged to accept one car of buckwheat at $4.75. There was a continuous demand greater than ability to supply and in November the independent prices were more generally around $13.00 to $13.50. Buckwheat was $3.75 to $5.00 and pea was scarcer than ever, due to the fact that much of it was used in the production of "range."

"Independent" prices continued to mount and in December ran up to $14.50 and pea to $11.00 and buckwheat held around $4.50 to $5.00. The State fuel administration investigated prices and conditions but its statements and orders had little effect on the situation.

Boston Prices, 1922, F. O. B. Mines.

	Jan.	Feb.	March	April	May	June
*Smokeless	$4.70-4.90	$4.50-4.65	$4.50-4.70	$4.70-4.80	$6.50-700	$6.00-6.25
Clearfield	1.75-2.35	1.70-2.25	1.65 2.25	1.90-2.40	3.00-3.50	2.85-3.25
Cambria	2.25-2.65	2.25-2.60	2.25-2.60	2.15-2.90	3.50-4.00	3.25-3.75
Somerset	1.60-2.00	1.75-2.00	1.75-2.00	2.00-2.50	3.25-3.75	4.25-4.50

	July	Aug.	Sept.	Oct.	Nov.	Dec.
*Smokeless ..	$6.35-6.75	$9.25-10.00	$7.90-8.25	$7.00-7.40	$7.00-7.25	$7.50-8.00
Clearfield	3.00-3.75	7.00- 9.00	4.00-4.75	4.00-4.50	3.00-3.75	3.25-4.00
Cambria	3.50-4.25	8.50- 9.50	4.50-6.00	4.25-4.75	3.50-4.75	4.00-4.75
Somerset	3.25-3.75	7.75- 9.00	4.50-5.25	4.00-4.60	3.25-4.25	3.50-4.25

*Gross tons f o. b. Hampton Roads.

New York charter was granted the Delaware & Hudson Canal Co. on April 23, 1823, under which the company operated until 1899, when the name was changed to the Delaware & Hudson Co. Originally the company operated a canal from Homesdale, Pa., to Rondout, N. Y. The first section of railroad was built in 1829.

Boston Coal Receipts.

Receipts of coal at Boston, Mass., by water and rail, during 1922 and five years previous, were as follows:

Water	1917	1918	1919	1920	1921	1922
Anthracite	1,388,670	1,162,167	1,018,563	1,376,954	1,174,206	632,112
Bituminous	4,153,277	5,594,626	2,616,276	3.047,643	3,213,240	4.065.540
Nova Scotia....	275,612	.....	.....	.....	.....	*1,463,584
Rail.						
Anthracite	217,408	330,372	257,841	234,261	236,292	182,538
Bituminous ...	119,991	84,570	115,637	119,449	73,256	83,956
Total	6,154,958	7,171,735	4,008,317	4,778,297	4,696,994	6,427,730

*Nova Scotia and Great Britain since June 1st.

Below is a table of receipts of both bituminous and anthracite coal, in gross tons, at Boston, by months during 1920, 1921 and 1922, and by it will be seen at a glance the fluctuations in receipts:

	Bituminous			Anthracite		
Month	1920	1921	1922	1920	1921	1922
January	255,048	214,263	364,677	106,927	131,413	42,167
February	299,436	194,266	453,439	88,567	172,795	94,778
March	323,078	234,533	525,288	136,032	137,946	141,317
April	229,759	227,781	394,123	109,829	66,992	71,064
May	294,464	209,664	326,063	139,602	141,937	13,175
June	284,760	268,617	310,987	163,071	152,771	25,895
July	277,537	233,822	313,412	132,122	119,916	16,751
August	261,821	353,878	250,235	177,778	86,750	22,857
September	278,220	295,447	246,765	150,670	88,176	25,109
October	203,725	369,766	326,691	161,283	132,154	109,778
November	172,584	317,735	293,503	109,304	90,355	118,889
December	286,660	371.733	332,404	136,230	89,293	132.870
Total	3.167,092	3,291,505	4,137,587	1,606,715	1,410,498	814,650

The above figures do not include receipts from Nova Scotia or Great Britain. Total tonnage of foreign coal arriving at this port since June amount to 1,463,584 tons.

As New England coal trade situation was so acute in 1921, interest is no doubt added to the presentation of figures showing the receipts of coal at Boston, principally by water, over a long term of years. The data given below represents authoritative figures on this subject:

Boston Receipts: All Gross Tons.

Year	Anthracite	Bituminous	Year	Anthracite	Bituminous
1921.....	1,410,498	3,291,505	1915.....	1,702,402	4,689,321
1920.....	1,606,715	3,167,092	1914.....	1,911,525	4,919,218
1919.....	1,276,404	2,731,913	1913.....	1,854,450	4,991,884
1918.....	1,484,539	5,699,096	1912.....	1,719,132	4,539,759
1917.....	1,606,078	4,273,268	1911.....	1,982,940	4,171,230
1916.....	1,480,896	4,910,687	1910.....	1,826,124	4,107,294

Year.	Anthracite.	Bituminous.	Year.	Anthracite.	Bituminous.
1909.....	1,706,659	3,495,011	1898.....	2,185,806	1,709,166
1908.....	1,776,401	3,302,929	1897.....	2,023,318	1,534,886
1907.....	2,053,328	3,184,964	1896.....	2,156,179	1,329,083
1906.....	1,659,679	2,859,844	1895.....	2,516,343	940,967
1905.....	1,977,398	2,798,290	1894.....	2,237,599	921,883
1904.....	2,002,779	2,515,490	1893.....	2,221,878	1,193,896
1903.....	2,151,545	2,263,729	1892.....	2,065,536	870,271
1902.....	1,015,404	2,224,508	1891.....	2,039,443	1,070,088
1901.....	2,126,411	2,113,302	1890.....	1,740,564	964,857
1900.....	1,938,733	2,050,500	1889.....	1,647,368	914,966
1899.....	2,166,452	1,698,105			

The variation in the amounts year by year is based upon several circumstances, a full explanation of which would require considerable detail. Not the least of the features is the growth of all-rail movement, this modern development materially affecting the relative importance of Boston as a coal receiving port for the New England trade.

Boston's Coal Handling Facilities.

While there are many coal-handling plants with water termini at Boston, these facilities were never intended to handle the unprecedented tonnages coming from abroad.

In normal times the present facilities can handle twice the ordinary receipts. The arrival of British coal in large quantities, however, caught the port unprepared. Dozens of vessels have been compelled to remain in the lower harbor, waiting their turn.

In the main harbor there are 15 wharves capable of handling the colliers which continue to arrive from England. The largest of these is Mystic Wharf, with 2,250 feet of docking space, or sufficient to berth five vessels at one time. This wharf has eight "grabs" or hoists, and is capable of moving 5,000 tons of coal per day. All told, there are 44 "grabs," with an aggregate hoisting capacity of approximately 25,500 tons daily.

Wages in Southeastern Kentucky.

A wage agreement running until April 1, 1924, has been entered into in southeastern Kentucky and eastern Tennessee by the U. M. W. and operators belonging to the Kentucky-Tennessee Coal Operators' Association. The scale is as follows:

Machine runner, $4.40; machine runner's helper, $3.44; coupler, $3.44; single driver, $3.44; track helper, $3.44; wiremen and pumpmen, $3.44; pumpman, $3.44; timberman's helper, $3.44; inside labor, not classified, $3.44; motorman, $4.00; spike team and boss drivers, $3.84; head trackman, $3.84; head timberman, $3.84; bratticeman, $3.84; trappers and boys, $2.00; blacksmith, $4.00; drum man, $4.00; engineer, $3.84; carpenter, $3.84; blacksmith's helper, $3.60; carpenter's helper, $3.60; firemen, $3.04; tippers, $3.20; trimmers, $3.20; teamsters, $2.80; outside labor, not classified, $2.72; greaser, $2.64; sandman, $2.64; yard coupler, $2.64; inexperienced coal loaders, $2.80.

BITUMINOUS REQUIREMENTS OF NEW ENGLAND

From a Maximum of Nearly 25,000,000 Tons During the War Years, Annual Consumption Has Dropped Below 20,000,000.

The importance of the New England buyers is widely recognized in the coal trade. The area of your territory is small, particularly the section where industrial activity is most concentrated, but our figures show that New England takes upward of 20,000,000 tons of soft coal in a normal year, in addition to between 11,000,000 and 12,000,000 tons of anthracite.

The anthracite tonnage, as we all know, is largely a domestic fuel, and yet we realize it is not without its usefulness in the manufacturing lines, particularly in the brass works of the Naugatuck Valley, to which some expensive shipments were made during the past summer, when the supply of hard coal from the mines was entirely shut off. But after all it is largely soft coal upon which the manufacturing interests depend.

Railroad requirements are substantial, of course, but setting these aside it is calculated that there must be upwards of 15,000,000 tons used for industrial purposes. This, despite the inroads of oil and hydro-electric power, and the fact that electricity is being manufactured in central power plants on a much reduced consumption of coal compared with the requirements of a few years ago.

As the development of the electrical industry goes on, it is seen that the invisible power can be employed at many places where until recently it was thought essential to have steam driven machinery, and many of those places that once found it desirable to maintain their own electrical plants now buy central station power.

More Power with Less Coal.

This concentration of effort results in much reduced coal consumption per unit of power, and it is a tribute to the industrial activity of New England that the amount of coal used does not decrease greatly in view of the use of other fuels and the more economical use of coal per unit of power in so many directions.

Some go so far as to say that improvements in electrical engineering permit power to be developed with half the coal consumption required a few years ago; also that central-plant power production develops results with only half the coal expenditure of the isolated plant. So there we have coal requirements cut down to 25 per cent by concentration and improvements.

Only in the face of a much increased demand for power would the coal requirements hold out as well as they do in the face of such circumstances tending to reduce them. It is true there has not been any growth in the use of coal in this territory in the last three years, and the fluctuations in the use of bituminous coal are such as to indicate that it is hard to determine what is really a normal year.

War-time activity also is to be considered as having introduced an

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An address by F. W. Saward, editor of Saward's Journal, at the Coal Conference of the New England Purchasing Agents' Association in Boston, February 12th, 1923.

unusual factor in the years 1917 and 1918, but looking at the bituminous business in this section over an extended period we develop some rather interesting figures.

Fluctuations Since 1915.

Possibly because full allowance was not made for railroad tonnages, the early estimates of the bituminous trade in New England were too small, as few of the figures available prior to 1915 put the amount at more than 10,000,000, though in that year the official figures that then became available indicated upward of 18,000,000 tons of coal being used.

More definite figures are available for succeeding years and the average for 1916, 1917 and 1918, based on the statistics from official sources, showed almost 25,000,000 tons of soft coal used annually.

Since that time there has been a decreasing tendency, the average for three years, 1919, 1920 and 1921, showing only 19,500,000 tons used, a decrease of 5,500,000 tons, or something more than 20 per cent, as compared with the abnormal prior years.

The tonnage now is but little more than what it was in 1915, and the years immediately preceding that time, but in developing this changing tendency New England only keeps pace with the rest of the country, the total bituminous tonnage for the past year being much below what might have been expected. In fact, the general comment is that we have lost ten years' growth.

Official figures are now available only for the year 1921, and they show practically the same movement of soft coal as in 1911. Under these circumstances, the future course of the trade is most interesting to those concerned in coal shipments to the eastward.

New England's Changing Industries.

A degree of pessimism sometimes affects the New England coal trade by reason of changing conditions in manufacturing circles. The idea has lately been advanced that the cotton mills will be located largely in the South and that the textile industry will pass out as an important factor, dwindling away as have some other New England industries.

In a recent interview, Governor Harding of the Federal Reserve Bank of Boston, pointed out that while New England has lost a volume of business formerly enjoyed in the building of wooden ships, having, for example, seen the Concord coach and the New Haven buggy business greatly curtailed, other industries have come to the front and the development of the copper business, with its allied brass industry, has fully made up for all that has been lost.

The changes that are transpiring in power requirements and in the obtaining of power are most interesting, and some go so far as to say it will be several years before there is a large increase in the use of soft coal in this section and for the country at large. The rapid growth that occurred prior to 1910 will probably not be experienced again.

For a period of 40 years, four decades, the production of soft coal doubled every ten years. That is the showing in round numbers. One

decade did better than that, the others a little less, but the net result was that there was sixteen times as much soft coal produced in 1910 as in 1870.

Peculiar Geographical Location.

No other industrial center is so far away from coal supplies as is New England, and that fact has one advantage, at least, to counteract the disadvantages in part, for it is a fact that a few miles additional in the distance from one coal field as compared with another means only a small percentage of difference.

To illustrate: The extra haul from the southern fields—largely non-union—does not count for much against the shorter haul from Pennsylvania, due in part of course to the splendid water facilities available for the traffic to and from Hampton Roads.

New England has two distinct sources of supply, northern and southern, to say nothing of the minor subdivisions that might be referred to. Many different fields serve the New England market and the keen competition for orders is something, I am sure, that attracts your attention. Many combinations of rail and water freights are often available in the delivering of tonnage, and here I find are opportunities for traffic work that do not prevail in other sections.

Troublesome Railroad Situation.

One of the problems confronting the New England trade, something affecting both the buyers and sellers of coal, is the fact that the railroad systems are very much on the ragged edge. Quite a volume could be written on the railroad situation, but it is a serious problem, we must all agree, for good and economical transportation is a prime requisite in modern affairs.

The seriousness of the situation is emphasized by the fact that so many sections of New England either are not growing or are becoming smaller in population. Yet railroad service has to be maintained, and on a higher plane than would be tolerated in more remote places.

At the same time, in the remote places of the South and Southwest, there is the prospect—indeed the certainty—of future growth to build up traffic and justify large expenditures today, to overcome the mistakes that may be made at the present time for one reason or another. But where there is no growth, where there is no future increase of business to overcome unwise expenditures of today, when improvements cannot be entered into with the thought that they will be fully justified by a couple of years' increase in business, there is a degree of stagnation.

Rarely, if ever, is there a real scarcity of soft coal. The scarcity that occasionally causes high coal prices is only in the availability of transportation facilities to take it to market, and because of this fact the providing of ample railroad facilities is something that may properly receive favorable consideration by large buyers of coal.

Coke production in Belgium in 1922 equaled 2,707,490 tons, compared with 1,402,610 tons in 1921 and 3,522,960 tons in 1913.

RECEIPTS OF COAL IN NEW ENGLAND

Volume of Business in Both Anthracite and Bituminous in 1922 Far Below Average of Recent Past.

The following tables summarize the receipts of anthracite and bituminous coal in New England, including steam sizes, for each month, from 1917 to 1922 as compiled by the Massachusetts Special Commission on the Necessaries of Life from the records of the carriers. The figures are in net tons.

Anthracite—Tide and Rail

	1917	1918	1919	1920	1921	1922
January ...	747,318	777,862	916,120	865,749	959,000	475,000
February ..	558,225	782,236	788,004	571,532	1,114,000	757,000
March	1,025,977	1,120,246	347,640	845,384	1,203,000	1,094,000
April	955,941	1,158,279	782,456	796,689	905,000	478,000
May	925,560	1,311,572	983,794	947,670	1,041,000	177,000
June	1,061,058	1,503,871	826,674	1,175,274	1,072,000	145,000
July	1,158,988	1,576,661	1,013,365	869,933	961,000	133,000
August	1,297,473	1,380,866	883,504	1,078,386	788,000	94,000
September .	1,112,852	1,243,873	1,028,947	986,954	688,000	215,000
October ...	1,080,539	1,089,883	1,047,795	1,128,725	919,000	908,000
November .	989,760	822,913	912,125	908,113	870,000	1,013,000
December...	766,140	852,372	1,047,764	1,080,936	854,000	982,000
Total..	11,679,831	13,620,640	10,578,188	11,255,345	11,374,000	6,471,000

Bituminous—Tide and Rail

	1917	1918	1919	1920	1921	1922
January ...	1,980,356	1,533,084	1,392,064	1,477,194	1,688,000	1,337,000
February ..	1,617,348	1,708,350	1,210,497	1,336,346	1,265,000	1,834,000
March	2,080,877	2,309,635	1,069,891	1,765,472	1,335,000	2,286,000
April	2,264,486	2,216,795	1,446,680	1,393,962	1,190,000	1,258,000
May	2,598,509	2,601,486	1,566,522	1,792,764	1,238,000	948,000
June	2,334,406	2,456,909	1,555,650	1,662,611	1,558,000	929,000
July	1,984,489	3,053,115	1,744,254	2,425,023	1,246,000	943,000
August	1,940,537	3,019,728	1,827,140	2,403,587	1,500,000	1,253,000
September .	1,873,512	2,549,715	2,036,529	2,340,889	1,468,000	2,300,000
October	1,833,376	2,318,820	1,945,333	2,016,661	1,647,000	2,212,000
November .	1,640,551	1,971,102	1,087,238	1,781,275	1,581,000	1,801,000
December...	1,355,098	1,432,741	1,300,185	2,050,000*	1,472,000	1,707,000
Total..	23,503,545	27,171,480	18,181,883	22,445,784	17,188,000	18,807,000

* Estimate.

French coal production in 1921 amounted to 28,976,495 tons, an increase of 3,000,000 tons over 1920, but a decrease of about 80 per cent compared with prewar production. The devastated mines in the north of France produced 5,365,712 tons, or double their 1920 output.

HAMPTON ROADS IN 1922

Coastwise Trade Increased by New Markets—Small Decrease in Dumpings Despite Strikes and Other Difficulties.

A general review of the coal business at Hampton Roads for the year 1922 shows that the coal market through here was benefited by results of new markets which caused a great increase in the coastwise trade and despite the two big strikes and other difficulties the drop in total dumpings was very small. It might also be said that this market had three separate and distinct phases during the year, each covering, roughtly, a period of four months.

The first extended from January through April, during which time the demand was at a standstill and prices were on a dead level of depression. Buyers had control of the market and the situation here was easy throughout, with prices under $5. The second period, which included the months of May, June, July and August, beginning one month after the strike began, curtailed production commenced to influence prices. This period was marked by a rapid advance in quotations, culminating in late August, when coal was sold as high as $11 at the piers. The third period, from September to and through December, the market gradually subsided. The reaction being much slower than the advance, despite the fact that demand in the tidewater trade remained dull.

The total tonnage dumped last year fell only about four per cent short of the record for the year 1921. Coastwise business was much better last year than in 1921; in fact, better than any recent years, as more than 12,000,000 tons of coal was handled through this port to destinations in the United States, as compared with 6,200,000 tons in the year 1921. The export and bunker trades suffered considerable loss during the year.

Strike Helps Considerably.

Last year's increase in the coastwise trade was due to the enlargement of the market for Pocahontas coal during the strike, and considerable tonnage was sent to New York and Baltimore, whereas in 1921 that department of the trade was negligible. In previous years New England has been almost the only destination of coal shipped from Hampton Roads in the coastwise trade. But when production in the unionized fields was cut off during the spring and summer, other points along the seaboard bought here in large quantities, and Pocahontas calls won a definite and, in some measure, a permanent place in the New York trade.

The export trade for the year suffered a sharp contraction and totaled only a little more than a million tons. At this figure it was only one-sixth the volume of the year 1921 and one-eleventh the volume of 1920, which was the banner year in the overseas trade. Loss of the foreign trade, which stands as the most important development of the year, was not unforeseen. It was apparent as early as the spring of 1921 that overseas coal business would dwindle away as competition from the British industry took away market after market in Europe and South America. Had it not been for the British coal strike during the second quarter of the year 1921, the export coal trade would have dropped almost to nothing even before the strike in this country cut the last vestage of its support away.

Bunker tonnage also showed a decided loss during the year and carried the

total tonnage down from 2,891,000 tons in 1921 to only 1,717,000 tons for last year, showing a loss of more than a million tons. The greater part of the loss in this trade was attributed directly to the shortage of fuel in this country during the strike and also to the high prices which the shortage occasioned. Towards the latter and with the closing of the year there were signs that bunker business was recovering, although very slowly and in keeping with the lack of activity in shipping, from the set-back of the strike period.

High Freights Affect Exports.

Experienced shippers do not believe that this country can regain its overseas coal business so long as freight rates remain as high as they are and so long as it is so difficult for American vessels to get return cargoes. High transportation charges in this country and the heavy British import trade give coal producers in the United Kingdom an advantage which it is hard for the operators in this country to overcome.

The figures below give the coal dumpings by the Hampton Roads piers for 1922 by months in tons and in comparison with the 1921 shows that despite the coal miners' strike and walk-out of the shipmen on the railroads that dumpings fell off less than three per cent.

The expansion of coal dumping facilities at the piers here which are under construction are said to be good indications that the coal trade through Hampton Roads will show improvement during the year of 1923.

The coal piers which participate in the coal trade through Hampton Roads are the Norfolk & Western and Virginian piers at Norfolk, and the Chesapeake & Ohio piers at Newport News. The figures below represent the dumpings over these piers for the year 1922, and a total of all piers for the three years previous as a comparison of the tonnage handled.

				Total			
Month	N. & W.	V'g'n.	C. & O.	1922	1921	1920	1919
January ...	458,756	301,636	177,273	937,665	1,425,209	1,354,967	1,047,196
February ..	503,551	330,783	265,044	1,099,378	1,026,913	1,281,998	780,019
March	650,162	525,670	321,309	1,497,141	962,914	1,742,221	820,342
April	742,875	400,252	266,303	1,409,430	1,253,446	1,905,326	904,326
May	817,695	453,077	271,271	1,542,043	1,830,624	1,792,514	986,165
June	850,474	465,663	440,342	1,756,479	2,210,826	1,963,603	1,113,844
July	509,628	468,159	352,577	1,330,364	1,628,318	2,127,745	1,022,300
August ...	674,134	321,681	302,158	1,297,973	1,119,389	2,092,557	1,276,283
September .	594,446	334,233	249,951	1,178,630	884,121	1,897,912	1,526,395
October ...	420,873	391,940	198,993	1,011,806	1,058,860	2,094,259	1,575,788
November .	278,706	366,942	175,235	820,883	985,167	1,717,817	807,428
December .	428,482	372,500	226,751	1,027,733	924,195	1,578,729	793,898
Totals	6,929,782	4,732,536	3,247,207	14,909,925	15,310,022	21,644,328	12,653,987

A calculation of the coal resources of Europe shows that while many changes have transpired by reason of the formation of new and smaller countries on the continent, Great Britain maintains its 32 per cent of the total, with its estimated reserve of 165,387 million tons. This including all seams of one foot and upwards within a depth of 4,000 feet.

Hampton Roads Average Bituminous Prices for 1922.

	January		February		March	
	Net Mines	Gross Piers	Net Mines	Gross Piers	Net Mines	Gross Piers
Pool 1..	$1.69-$1.87	$4.70-$4.90	$1.65-$1.74	$4.65-$4.75	$1.65-$1.78	$4.65-$4.80
2..	1.56- 1.65	4.55- 4.65	1.53- 1.61	4.50- 4.60	1.47- 1.61	4.45- 4.60
5..	1.29- 1.43	4.25 -4.40	1.07- 1.29	4.00- 4.25	1.29- 1.53	4.25- 4.50
6..	1.07- 1.29	4.00- 4.25	.85- 1.21	3.75- 4.00	1.07- 1.29	4.00- 4.25
7..	1.29- 1.43	4.25- 4.40	1.07- 1.29	4.00- 4.25	1.29- 1.53	4.25- 4.50

	April		May		June	
	Net Mines	Gross Piers	Net Mines	Gross Piers	Net Mines	Gross Piers
Pool 1..	$1.78-$1.96	$4.80-$5.00	$3.08-$3.26	$6.25-$6.45	$2.94-$3.21	$6.10-$6.40
2..	1.65- 1.83	4.65- 4.85	2.85- 3.03	6.00- 6.20	2.85- 3.08	6.00- 6.25
5..	1.43- 1.61	4.40- 4.60	2.90- 3.12	6.05- 6.30	3.30- 3.48	6.50- 6.70
6..	1.16- 1.38	4.15- 4.35	2.63- 2.78	5.75- 6.00	2.95- 3.13	6.10- 6.30
7..	1.43- 1.61	4.40- 4.60	2.90- 3.12	6.05- 6.30	3.30- 3.48	6.50- 6.70

	July		August		September	
	Net Mines	Gross Piers	Net Mines	Gross Piers	Net Mines	Gross Piers
Pool 1..	$3.78-$4.04	$6.75-$7.05	$7.35-$7.57	$10.75-$11.00	$5.12-$5.56	$8.25-$8.75
2..	3.59- 3.82	6.55- 6.80	7.13- 7.35	10.50- 10.75	5.03- 5.43	8.15- 8.60
5..	3.55- 3.78	6.50- 6.75	6.46- 6.90	9.75- 10.25	5.16- 5.43	8.30- 8.60
6..	3.15- 3.60	6.05- 6.55	5.56- 6.15	8.75- 9.25	4.81- 5.03	7.90- 8.15
7..	3.55- 3.78	6.50- 6.75	6.46- 6.90	9.75- 10.25	5.16- 5.43	8.30- 8.60

	October		November		December	
	Net Mines	Gross Piers	Net Mines	Gross Piers	Net Mines	Gross Piers
Pool 1..	$3.91-$4.13	$6.90-$7.15	$4.22-$4.45	$7.25-$7.50	$4.36-$4.54	$7.40-$7.60
2..	3.78- 3.95	6.75- 6.95	4.09- 4.25	7.10- 7.30	4.36- 4.54	7.40- 7.60
5..	3.55- 3.78	6.25- 6.50	3.78- 4.00	6.75- 7.00	3.78- 4.00	6.75- 7.00
6..	3.02- 3.20	5.90- 6.10	3.42- 3.64	6.35- 6.60	3.47- 3.73	6.40- 6.70
7..	3.55- 3.78	6.25- 6.50	3.78- 4.00	6.75- 7.00	3.78- 4.00	6.75- 7.00

Baltimore Spot Prices, 1922, F. O. B. Mines, Net Tons.

	Jan.	Feb.	March	April	May	June
Pool 1..	$2.10-$2.50	$2.50-$2.60	$2.65	.....	$3.75-$4.25	$3.75-$4.25
9..	2.10- 2.15	2.15- 2.35	2.00- 2.30	.....	3.75- 4.25	3.75- 4.00
10..	1.75- 2.00	2.05	2.10- 2.15	.....	3.50- 4.00	3.75- 4.00
11..	1.80	1.75	2.00- 2.05	$2.50-$3.00	3.25- 3.75	3.50
54..	1.40	1.35- 1.50	1.50- 1.60	2.75- 3.00	.....	3.50
64..	1.40	1.35- 1.50	1.50- 1.60	2.75- 3.00	.....	3.50

	July	Aug.	Sept.	Oct.	Nov.	Dec.
Pool 1..	.....	.....	$5.25-$5.75	$5.25-$5.50	$4.25-$4.75	$5.00
9..	$4.50	$7.00-$8.00	5.00- 5.25	4.50- 4.75	4.00- 4.25	4.25- 4.50
10..	4.50	7.00- 8.00	4.75- 5.00	4.25- 4.50	3.25- 3.50	4.00
11..	4.25- 4.40	6.50- 7.75	4.25- 4.50	4.00- 4.25	3.00- 3.15	3.00- 3.25
54..	3.75- 4.40	6.00- 7.00	4.50- 4.75	4.00- 4.10	3.25- 3.40	3.00
64..	3.75- 4.40	6.00- 7.00	4.50- 4.75	4.00- 4.10	3.25- 3.40	3.00

Hampton Roads Exports.

Exports of coal and coke, also bunker tonnage supplied at the Hampton Roads ports during 1921 and 1922, were:

	Exports							
	Anthracite		Bituminous		Coke		Foreign Bunker	
Month	1921	1922	1921	1922	1921	1922	1921	1922
January ..	.....	.....	736,448	69,406	1,450	165	238,113	132,388
February .	.....	.....	420,426	103,489	1,237	.....	180,820	121,180
March ...	.....	.....	335,179	140,609	196	.....	185,385	134,186
April	.....	.....	556,687	212,527	238	.....	259,856	143,741
May	2,264	.....	1,056,601	123,711	.....	.....	335,189	123,524
June	.....	.....	1,373,797	88,806	504	.....	337,419	106,507
July	2,614	.....	850,760	48,058	108	.....	292,521	88,411
August ...	.....	.....	202,472	45,047	.....	.....	217,369	71,178
September	.....	.....	103,511	48,836	.....	1,864	125,609	48,093
October ..	.....	.....	151,840	47,376	.....	.....	137,123	61,093
November	.....	.....	140,101	26,212	.....	.....	101,234	75,146
December..	.....	.....	116,181	49,951	.....	.....	126,263	76,565
Total....	4,878	.....	6,044,029	841,039	3,733	2,029	2,536,901	1,192,012

Baltimore Coal Exports by Months.

The following tabulation shows bituminous export shipments by months during 1921 and 1922:

	Anthracite		Bituminous		Coke		Bunkers	
Month	1921	1922	1921	1922	1921	1922	1921	1922
January ...	....	....	157,847	11,030	3,325	1,042	46,545	15,009
February ..	....	....	78,443	19,141	2,186	5,299	39,664	20,015
March	....	10,995	92,881	19,339	1,736	....	28,770	17,680
April	149	....	58,895	14,141	....	7,534	44,852	22,971
May	....	....	234,884	....	1,529	....	46,846	10,871
June	3,500	....	318,495	10,995	25	....	57,735	9,298
July	....	....	350,559	....	2,614	....	44,427	6,721
August	....	....	66,597	....	....	....	22,685	8,672
September..	....	....	36,943	....	....	....	17,483	5,291
October ...	....	....	29,572	4,866	....	....	11,393	8,782
November..	....	....	36,671	2,054	3,567	....	14,977	9,179
December..	....	....	26,264	11,060	3,156	....	20,025	8,484
Total...	3,649	10,995	1,488,051	92,626	18,138	14,235	395,402	154,973

Briquet Manufacturing Companies.

The following list of eastern anthracite briquet manufacturers may be of interest to retail dealers looking for substitutes for domestic sizes:

Burnite Coal Briquet Co., 543 New Jersey avenue, Newark, N. J. Fuel Briquet Co., 520 Brunswick avenue, Trenton, N. J.; General Briquetting Co., 25 Broad street, New York; American Briquet Co., Drexel Building, Philadelphia; Anthracite Briquette Co., Sunbury, Pa.; Lehigh Coal & Navigation Co., 437 Chestnut street, Philadelphia; Scranton Anthracite Briquet Co., Dickson City, Pa.

YEAR'S DEVELOPMENTS IN FAIRMONT REGION

Despite Long Strike, Production Equaled 1921 Because of Activity at End, When Operators Had Plenty of Business.

The production in northern West Virginia during 1922 reached 14,800,000 tons, against 14,389,960 tons in 1921, despite the five months' cessation of work due to the strike.

Coal business during the year was good. The strike caused a great demand for coal. The car shortage toward the end of the year kept the price levels close to the $3 mark.

Production records for northern West Virginia were broken on November 26th, when 1,731 cars, or 150,050 tons, were loaded. On the same day the record loading on the Monongah Division, B. & O., the chief producing division in northern West Virginia, was also shattered when the daily loading aggregated 1,731 cars, excelling the previous high record of December 14, 1920, when 1,608 cars were loaded. During the five weeks preceding December 2nd, the mines of northern West Virginia produced 2,505,400 tons of coal, or an average of more than a half million tons a week.

The Northern West Virginia Coal Operators' Association has compiled the following statistics for 1922: Coal loaded east, 9,181,200 tons; coal loaded west, 923,850 tons; railroad fuel 4,159,950 tons, or 28 per cent of all of the tonnage produced. Of that amount, 2,508,850 tons were acquired by foreign carriers and 1,651,100 tons by the originating lines.

Lake shipments were 639,500 tons, including 400,650 tons off the Monongah, Charleston and Connellsville Division of the B. & O., while 238,850 tons were loaded off the Morgantown & Wheeling Railway.

Collectively the Monongah, Charleston and Connellsville Divisions loaded 3,546,450 tons of local railroad fuel and 1,580,300 tons of foreign railroad fuel.

The Cumberland Division and the M. & K. loaded 1,578,150 tons of coal to the east, all of their tonnage going in that direction. In fact, these divisions loaded 23,800 tons of local and 182,850 tons of foreign railroad fuel.

Off the M. & W., there were 644,350 tons of coal loaded east and 26,550 tons west. Foreign railroad fuel loading during the year aggregated 745,700 tons.

The Belington & Weaver and Wyatt-Bingamon & Helen's Run spurs of the W. M. during the year loaded 939,300 tons of coal east, and 318,400 tons of coal railroad fuel were produced on those lines.

It is estimated that the strike cost the region from $30,000,000 to $40,000,000. There were 117 working days lost. During the strike non-union mines loaded 1,925,850 tons, or an average of approximately 320 cars a day. The peak of non-union daily loading was reached just before the end of the strike, when 225 mines were active and 635 cars of coal were loaded.

Late in August the Hoover plan for distribution was put into effect in this region and representatives were sent here. Considerable coal was sent to Michigan and points in the Northwest.

On October 4th, the B. & O. acquired the Indian Creek & Northern Railway, an important spur that taps virgin coal land.

Probably one of the most interesting cases in the courts developed on October

5th, when H. M. Sipe, Clarksburg, sued the U. M. W. for damages in the sum of $50,000 for refusing to let him sign up his mine. After the union permitted Sipe to sign up, the case was dropped.

During the year reports of three deaths were received in the region with deep regret, although none of them occurred here. On February 7th, Lindsay McCandlish, vice-president of the Hutchinson Coal Co., Philadelphia, died at Palm Beach, Fla. William McGreevy, manager of sales in Philadelphia for the Consolidation Coal Co., died on June 17th, and Capt. J. Gordon Smyth, general manager of the Elk Horn Coal Corporation, was killed in a roof fall near Jenkins, Ky.

Some Important Mining Deals.

Many coal deals were executed in the region during the year, the most important of which were the following: Jamison C. & C. Co., purchase of 700 acres near Jamison No. 8 mine and later the purchase of 225 acres for $75,000; Fairmont & Chicago Coal Co. bought 2,000 acres of Sewickley coal land formerly held by the Chesapeake Coal Co. at $1,000,000, and later the 160 acres of Sewickley coal held by the LeMar Coal Co. near Barrackville, at sheriff's sale, for $82,000; Brady Coal Corporation re-financed with William Warner, Cleveland, as one of the big stockholders, and name changed to Brady-Warner Coal Corporation, purchased 10,000 acres of coal land in Clay and Nicholas counties.

Two other deals in which Fairmonters were interested were the purchase of Jamison C. & C. Co.'s six mines in the Greensburg, Pa., basin by the Keystone C. & C. Co., and the purchase by the Consolidation Coal Co. of 18,000 acres of Pocahontas coal land in McDowell County, W. Va.; 10,000 acres of Pocahontas coal land in Tazewell County, Va., and 11,500 acres of block land in Bell and Knox Counties, Ky., from the Carter Coal Co. for an amount said to be in the neighborhood of $15,000,000. The production in the Pocahontas-New River Division of the company, as it is termed, has been greatly increased from the million to a million and a quarter tonnage formerly produced.

Probably no one has followed the assigned car proposition more keenly than operators in the Fairmont region. Practically all are against them, but many are loading them rather than let some one else get the business if they have been "legalized." In some cases, perhaps, the opposition has not been as strong as several years before.

On March 3rd the appeal brief from the decision of the federal appeal court was filed with the United States Supreme Court, and on April 11th the highest tribunal decided that it had no jurisdiction in the case. Not until after the federal court in Cleveland refused to sustain an injunction against the B. & O. using assigned cars did the matter again appear.

The B. & O. immediately thereafter used assigned cars galore and were charged by coal operators with urging foreign roads to do likewise, in order to present a solid front as far as the railroads were concerned. In the fall the Interstate Commerce Commission took up the cases, and George S. Brackett, secretary of the Northern West Virginia Coal Operators' Association, was one of the witnesses against assigned cars.

On April 28th, the operators along the Monongahela Railway who sued the railroads for damages of an inequitable car supply, which they claimed the op-

erators in Pennsylvania along the P. R. R. and P. & L. E. received, were informed that damages were disallowed.

Car shortage was felt for the first time during the year on March 24th, just before the strike occurred. During the fall the shortage was the worst the mines in the region have ever experienced.

Tidewater (Piers) Prices, 1922.

New York

	Jan.	Feb.	March	April	May	June
Pool 9..	$5.45-$5.60	$5.45-$5.90	$5.50-$5.75	$6.25-$6.50	$8.00-$8.50	.....
10..	5.20- 5.30	5.25- 5.50	5.20- 5.40	5.80- 6.10	8.00- 8.25	7.50- 7.75

	July	Aug.	Sept.	Oct.	Nov.	Dec.
Pool 9..	.....	.....	$8.50-$8.75	$8.00-$8.15	$7.50-$7.75	$8.00-$8.25
10..	$7.50-$7.75	$12.00-$12.25	8.25- 8.50	7.50- 7.75	7.00- 7.75	7.50- 7.75
11..	.....	11.00- 12.00	7.75- 8.00	7.00- 7.25	6.50- 6.75	7.00- 7.25

Philadelphia.

	Jan.	Feb.	March	April	May	June
Pool 9..	$5.50	$5.60-$5.95	$5.50-$5.85	$5.50-$6.00	$6.55-$7.00	$7.35-$8.00
10..	5.10-$5.30	5.35- 5.60	5.20- 5.60	5.50- 5.80	6.40- 6.75	7.00- 7.25
11..	5.50- 5.60	5.70- 6.05	5.70- 6.00	6.00- 6.25	6.90- 7.30	8.25

	July	Aug.	Sept.	Oct.	Nov.	Dec.
Pool 9...	$7.75-$8.30	.....	.....	.....	.....	$7.55-$7.90
10...	7.60- 7.90	.....	$8.50-$9.00	$7.25-$7.75	$7.15-$7.65	7.00- 7.25
11...	.....	.....	8.00- 8.75	7.00- 7.50	.....	6.60- 6.80

Exports and Bunker Tonnage at New York.

The exports of coal and coke and foreign bunker tonnage supplied to vessels at the port of New York during 1921 and 1922 were:

Month	Anthracite 1921	Anthracite 1922	Bituminous 1921	Bituminous 1922	Coke 1921	Coke 1922	Foreign Bunker 1921	Foreign Bunker 1922
January	4,988	3,477	19,483	3,883	876	611	291,333	156,224
February	5,133	5,476	8,037	607	809	88	233,586	146,713
March	6,987	3,736	3,459	54	1,235	159	269,441	163,722
April	9,975	3,414	5,258	115	117	561	290,904	142,078
May	10,939	6,994	6,724	234	302	1,552	273,944	179,256
June	15,822	2,313	8,924	42	2,398	89	278,566	146,562
July	25,788	477	4,011	206	621	613	287,141	132,549
August	15,438	20	1,021	596	98	573	241,638	95,103
September ...	14,072	10	2,924	687	56	106	241,959	107,727
October	6,310	17,066	962	556	37	628	193,646	116,160
November ...	11,198	7,148	719	725	3	204	175,635	177,133
December	5,225	9,147	.....	....	....	1,231	203,760	144,064
Total 131,875		60,278	61,522	7,808	6,552	6,415	2,981,553	1,706,791

JOHNSTOWN IN 1922

Prices Covered Wide Range Owing to Strike and Market Conditions.

In the closing days of 1922 Johnstown coal wholesalers and operators were generally agreed that the year had been one of the most remarkable in a decade, considering the ups and downs of the market, the unexpected breaks and flurries, the greatest coal strike on record, and finally the almost complete failure of car supply.

Beginning the year prices for all grades of Central Pennsylvania coal were at rock bottom, and would have found still lower levels except for the utter inability of the operators to load cars at a greater loss than they were standing at that time. Many mines throughout the district had been idle for months. In several instances, however, repair men were sent into the workings and by the middle of January there was an upward trend in production figures. As April 1st approached the activity increased with most of the mines, and the union mines, without exception, worked at capacity and with a fair increase in price, sufficient to allow a small margin of profit.

At the beginning of the strike period April 1st, B. & O. Pool 11 was still selling as low as $1.50 per ton. The demand for this coal had not been great on account of most of it being produced in non-union mines, and it was expected that fair quantities could be secured after the union mines had ceased operations.

Strike Spreads to Non-Union Mines.

But during April and May the union organizers centered their attention on the B. & O. district and production was seriously curtailed for a time, with the result that in May Pool 11 began to soar and reached a mark of $4.40, while Pool 10, shipped by wagon loaders along the P. R. R. and some of the mines which were successful in combating the efforts of the union, brought $3.25 to $3.35. During the month of June B. & O. Pool 11 dropped back to $3.75, while the P. R. R. wagon loaders received the same figure, and this price held fairly constant until July 11th, when a new flurry started.

On this date P. R. R. Pool 10 opened at $3.85, and in the next 11 days had advanced 60 cents per ton. By July 26th, when the possibility of a strike settlement seemed further off than ever, Pool 10 went to $8.15, while all other classifications sold proportionately high.

The break came about the middle of August, the first big drop being followed by gradually receding prices through September, October and November, until the last of that month Pool 11 hovered around the $2.75 mark. The last month of the year showed a steady recovery of prices.

Predictions All Go Wrong.

Conditions marking the local trading were entirely contrary to predictions from the beginning of the year. In the first place, no thought was given prior to the strike to the possibility of the union seriously handicapping the larger operations of Somerset County. As a matter of fact, most of the mines did continue to operate, but on a reduced scale and at a greatly increased cost on account of the necessity of employing large numbers of mine guards, etc.

The strike in Somerset County was marked by comparatively little lawlessness, though the courts were continually occupied with minor cases growing out of the strike. But production was curtailed and brokers who had counted on a steady flow of coal out of the non-union district found that while orders were fairly plentiful, there was little coal to be had.

With the resumption of mining in August and September in the union mines it was expected that there would be a great demand for coal from all sections of the country, and that this, in itself, would hold up prices. It soon developed, however, that the demand was a myth, and that even if it had developed to any considerable extent, cars could not be secured to supply the needs. It was decided, therefore, that the only reason for the prices holding to a point where profit is possible was due to the shortage of cars. In other words, "the shortage of cars makes the price," as one prominent Johnstown buyer stated.

In the last condition, the shortage of empty cars, the B. & O. operators suffered more than others in the Johnstown district. The supply had never been anywhere near normal, and on many days it had happened that a coal train had not passed over the Somerset & Cambria branch. Conditions on the Pennsylvania and New York Central were almost as bad, while the Buffalo, Rochester & Pittsburgh held up splendidly. The Western Maryland established a system of giving a fairly good distribution three days a week which met with general favor.

One of the developments of the year was the demand for cannel and screened coal to take the place of anthracite. Much of this coal was shipped to eastern coal yards for domestic use, and local brokers expect to find a permanent market as a result.

Very few new mines were opened in the district during the year, though notable improvements were made at some of the established operations. The one strip mine in the district, that of the Purity Coal Co., at Boswell, made fine progress. Many of the larger corporations used the strike period to make needed improvements, so that today they are better prepared to produce efficiently than ever before.

Exports from Charleston.

Exports of bituminous coal from Charleston, S. C., during the calendar year 1922, were as below, in comparison with four years previous:

Month	1918	1919	1920	1921	1922
January	....	....	23,583	24,271	14,007
February	....	3,960	62,222	26,713	12,025
March	850	6,120	46,111	39,039	13,038
April	....	3,181	69,242	12,173	19,836
May	....	12,942	66,475	19,745	10,980
June	799	10,057	71,548	62,249	2,807
July	1,343	9,455	64,826	59,833	19,025
August	....	26,165	50,889	12,727	2,894
September	782	24,678	67,787	14,757	4,151
October	6,211	27,426	59,844	12,368	10,283
November	3,624	11,089	53,311	8,458	4,845
December	868	21,398	26,334	8,173	8,230
Total	14,471	156,471	662,172	298,506	122,111

THE YEAR AT PITTSBURGH

More Than Momentous for the Industry—Public, Not Operator, Makes Market.

The year 1922 was more than a momentous one for the coal industry in the Pittsburgh district. It brought greater vision to both the operator and consumer alike, brought them more on a parity in the consideration of conditions in the trade and while their views differed largely at the end of the year, they enter 1923 with a more proportionate respect for each other.

One salient feature of their relations has been the demonstration of the coal operators' maxim that the "public and not the operator makes the coal market."

If the coal consumer will buy coal when he does not need it urgently, knowing that he will need it, there will be no abnormal markets in the coal trade.

The strike, of course, was the biggest feature of the year in local coal circles. The Pittsburgh operators constituted the backbone of the fight for the principle as enunciated and reiterated time and time again during that memorable struggle, that the one agreement for the so-called Central Competitive District was illegal in the eyes of the law and the operators faced prosecution under the Sherman act for being participants to such an agreement.

The end of the strike was a loss and a gain. The United Mine Workers dictated the conditions of wages and labor, but the local operators won their fight for a district agreement. They might have won more but for the vacillations of a majority of operators of other fields.

Weak at Opening.

The opening of the year 1922 saw the coal market in a very weak state. The large industrial consumers evidently took as much of the coal as they cared to carry. The possibility of a strike was scoffed at and prices were down as low as $1.50 for mine run steam coal. Lump sizes were being sold on the market as low as $1.75. For two months, or through January and February, the market continued sluggish. In March, an intimation that a strike actually would occur came into the popular mind and many users of coal began to do something they had not done in other times—stock up coal.

The extent of this stocking up was great, but not great enough as events in the summer proved. Yet this stocking up of coal prevented the interference of the public necessity as a factor in the settlement of the strike and the issue was settled between operator and miner. Prices at the end of March found a basic figure at $2.50 for mine run.

As scheduled, the strike went into effect on April 1st. With a supply of coal on hand at a time when consumption is at a minimum, the public was not interested except in a perfunctory manner. In May, the stiffening of prices began. At first the advances were made 25 cents per week, then 50 cents and finally advances reached as high as $1.00 in a week. The price of mine-run in June was approximately $3.50. In the middle of July it had reached $4.50.

At this juncture the district was thrilled by the announcement that the Pittsburgh Coal Co. and the Henderson C. & C. Co. would attempt to operate two

mines open-shop. The attempt was made but was never successful in the true sense of the word. By the end of July, mine-run steam coal had reached $7.50.

In the meantime, the price of coke had been steadily advancing. From a low of about $2.75, the market had arisen to $14 by the end of July. The supply of coke from the non-union field about Connellsville was small while there was a big demand from blast furnaces.

Prices Ease Off in August.

Prices eased off in the early part of August as more coal and coke was loaded. Mine-run sold at $6.50. The first movement for the ending of the strike was begun at this time. The Pittsburgh producers declined to meet with President Lewis of the miners in Cleveland.

Coal supplies on hand had reached a minimum and many Pittsburgh plants were beginning to close down. There was a deadlock in sight. The attitude of other operators toward Lewis' proposal was awaited with great interest.

After the agreement in Cleveland, most buyers left the market in anticipation of lower prices. Prices for mine-run coal had reached a maximum of $8.50. From that time they began to decline.

The latter part of August found prices softening. The Connellsville Frick mines raised their wages. The Pittsburgh operators refused to sign with the miners to permit the reopening of their mines.

The first part of September found the mine-run down to a $5.00 level. There was a fair supply of non-union coal coming into the district. The Pittsburgh operators then signed the agreement with the miners.

Prices began to drop 50 cents a week with the mines reopening, until the $4.00 price was reached, where it hung for several weeks. The car shortage element now entered and threatened to become the biggest factor in the district.

The buyers' strike started in October and proved successful. Prices began to go lower again, dropping to $3.00 the latter part of October. Coke dropped to $7.00 a ton in the first part of November. The car supply factor and the lake trade prevented further price declines. In the first part of December prices weakened again and a low mark of $2.50 was reached.

A miserable car supply and a cold snap in the latter part of December sent prices up again and the year came to a close with mine-run steam coal selling at $3.30 a ton and lump sizes selling from $3.75 to $4.00 and from $4.00 to $4.50.

A demand from the east for coke for domestic purposes sent up that commodity to the $7.50 level.

Mine Prices at Pittsburgh, 1922.

	Jan.	Feb.	March	April	May	June
Pitts. Sc. Gas..	$2.60-$2.70	$2.60-$2.70	$2.60-$2.75	Strike	Strike	Strike
M. R. ..	2.10- 2.30	2.10- 2.30	2.10- 2.30	Strike	Strike	Strike
Slack ...	1.75- 1.85	1.60- 1.70	1.60- 1.70	Strike	Strike	Strike

	July	Aug.	Sept.	Oct.	Nov.	Dec.
Pitts. Sc. Gas.	Strike	Strike	.....	$4.25-$4.75	$4.00-$4.50	$3.50-$3.75
M. R. ..	Strike	Strike	$5.00-$6.00	4.50- 5.00	4.25- 4.75	3.75- 4.00
Slack ..	Strike	Strike	.....	4.75- 5.25	4.50- 5.00	4.25- 4.50

BUFFALO IN 1922

One Feature Was the Heavy Receipts of Bituminous Coal by Lake.

The year 1922 in the Buffalo coal trade was marked by probably the average ups and downs caused by the strike but though this overshadowed every other influence very far, it has been so general that to give much of the detail of it would be to repeat what has taken place everywhere coal is used in quantity. Next to that has come the car shortage, but that has also been everywhere and is still about as marked as ever. It has not yet been as complete as the coal shippers predicted it would be, but it was, and is, bad enough. They are now saying that the shortage was made worse by the heavy passenger traffic over the holidays. The price of btuminous went up about $1 a ton on account of the special shortage.

A glance at the anthracite trade shows few important local changes. The companies have maintained their representatives, and the offices, after a summer of almost complete idleness, are now going on about as before. The shortage of hard coal is severe and is pretty sure to last till spring, but the supply of gas, now a mixture of the natural product and by-product from local coke plants, is helping out well. The pressure held right through the cold snaps of December.

This port usually ships a fraction over 3,000,000 tons of anthracite to the upper lakes, but the strike cut it down to 1,087,830 tons for 1922. It all went to points beyond Lake Huron, except a cargo of 530 tons to Port Huron. A spurt in 1913 ran the total up to 5,133,696 tons, but much coal was carried over that winter.

The demand for anthracite ran independent prices up to $15 at the close of the year. Even at such prices there were jobbers bidding against one another for the coal, which they had sold for still more.

The local bituminous trade kept up much better than might have been expected. This market has the benefit of the Allegheny Valley and Bessemer district, so that it is able to dictate prices to Pittsburgh to a certain extent, and it seldom pays full prices for the large amount of Pittsburgh coal sold here. Several years ago it was estimated that of the 15,000,000 tons or so of soft coal marketed here, one-third was Pittsburgh. It is probably considerably more than that now.

Nearly Million Tons Received by Water.

Buffalo gets practically all of its coal from the Allegheny Valley, Bessemer, Pittsburgh and No. 8 districts, the latter being in Ohio. The strike increased the water receipt from Ohio ports, mostly from West Virginia, to 895,810 tons in 1922, as against 142,500 tons in 1921, and 51,200 tons in 1920. Much more would have been brought in but for the car stortage that practically shut off shipments after a heavy movement for a month or two. The traffic is likely to be kept up, for the coal is of a variety that some of the big iron furnaces need.

The building by local by-product coke plants promises to change the uses of coal very much. There are three large plants here now, the Bethlehem Steel, Semet-Solvay and Donner-Union. At first, the strike affected these plants materially and cut off the gas that had been furnished to Buffalo and Tonawanda, but in the fall the operations were resumed and the amount of gas available for private use is large. For a while some of the companies sold coke for domestic use, charging as high as $14 a ton at the ovens, but the furnaces later on took it all. As

usual, the late increase of Niagara water power has been taken up without apparently cutting down the use of coal. There is still a call for more such power.

A special feature of the local bituminous trade was a sudden increase of offices, most of them coming in towards the end of the year. They increased the downtown wholesale offices from 65 to 80, but it is already found that they are not all strong enough to endure. Three or four have dropped off and others are doing little. Good bituminous salesmen can make a fair profit in the trade as it exists now, but it will not come to them.

Operators, as a rule, still complain that they are making no money and they refuse to do anything that includes additional expense. Some of them say they cannot outlast another bad strike; wages are so high that there is little left for the mine owner.

Early in the year bituminous prices were down to about $2.60 for gas lump to $1.70 for slack. They began to rise in April, and in August reached the peak of $8 for gas lump and $6 for slack. A decline soon set in, and in December prices were $4.75 for gas lump and $3 for slack. Holiday car shortage raised these prices about $1, as before stated.

No deaths have occurred among the shippers, and as to the new ones that have come in, mostly to find a wider market for No. 8 coal, it will take another year to find out as to their staying powers. Meanwhile, Buffalo is holding her own as a market, probably selling more coal now than ever before.

Buffalo, N. Y., Bituminous Prices in 1921 and 1922.

The bituminous market sagged steadily through the year 1922, prices going decidedly lower than was expected. When the seemingly low price quotations were made two years ago it was remarked by members of the trade that the bottom had about been reached, but such did not turn out to be the case, as the figures given below will show. Probably never before in a whole year was the change in prices uniformly downward. The following figures show the situation:

In 1922, after some fluctuations near the low point, prices mounted steadily until the month of August, after which they declined to a point about 75 per cent. above the January prices.

Month	Youghiogheny Lump	Pittsburgh and No. 8 Lump	Mine-Run	Slack
	1921	1922	1921	1922
January	$2.60	$2.25	$2.10	$1.70
February	2.60	2.25	2.10	1.70
March	2.50	2.20	1.85	1.70
April	2.75	2.50	2.25	2.00
May	3.50	3.25	2.75	2.50
June	4.50	4.25	3.75	3.50
July	5.00	4.75	4.50	4.25
August	6.00	7.50	7.00	6.00
September	5.50	5.25	4.25	4.00
October	5.00	4.50	4.00	3.50
November	5.00	4.50	4.00	3.50
December	4.75	4.25	3.75	3.25

YEAR AT CINCINNATI

Non-Union Operators Reaped a Harvest as Result of the Strike.

The year 1922 was one of rather unusual features in the Cincinnati coal market, but its average was not unfavorable. It began with several months of very sluggish market due largely to overproduction in the various districts and a very low state of both steam and by-product demand. A large number of the industries of the Central West were silent as the result of the nation-wide industrial prostration, and steam coal consumption was not more than half its usual volume, while the winter was mild and open and domestic coals were in no great demand.

Temperatures held so high an average, in fact, that where natural gas was available, it was drawn on for household needs. Under these conditions, competition was keen for every available market, and prices went so low that only under the most favored conditions of production was there a profit. Railroad service was good at this time, due to the fact that all sorts of traffic was light.

On April 1st came the great strike of bituminous miners. Very few districts related to the Cincinnati market were affected. The New River smokeless district, which the year before forced under union control as the result of government dictation, soon gave up its union charters, while in the Kanawha district of West Virginia always a union stronghold, the number of non-union operations grew apace.

In the Jellico and Bell county districts of Kentucky union men, for the most part, kept at work under a special agreement. There was no great increase of demand, however, until about the 1st of May, when, with the public conclusion that the strike was going to be long-drawn out, the rapid decrease of industrial reserves, and the measurable quickening of industry, demand greatly strengthened and a more active market was reflected in much better prices.

Demand Shows Strength After May 1st.

Operations went well and profitably during May and June, with everybody busy and happy, until about July 1st, when the strike of the railway shopmen seriously complicated the situation and made a deep cut in the percentage of transportation. During this period, car supply fell way below the requirements and sales of fuel were only from day to day and on a car-number basis. Production had to be reduced accordingly and while prices went up, the high relation of overhead expense to tonnage production made even the better price unprofitable.

This condition, of course, was most serious during the earlier days of the strike of railway men. Practically all the coal roads in Kentucky, West Virginia and Tennessee refused to sign up and undertook to substitute new men for the strikers, with indifferent success. Car supply went low and motive power suffered greatly. Delivery of coal fell on the C. & O., B. & O., L. & N., the Virginia, the Southern, Queen & Crescent, and even on the Norfolk & Western to a 15 to 25 per cent basis.

This soon resulted in individual surrender to the miners' union of Ohio, Illinois and Pennsylvania coal companies and the later compromise of the rail men's controversy by the B. & O. and the C. & O., the other roads holding out against the union regime.

Good Fall Business.

Following these adjustments, there was a freer flow of fuel from all districts, some modification of prices to meet the new ratio of supply and demand, which in the meantime was considerably bettered for the producer by the pressure of a belated lake demand, a much larger steam and by-product consumption and a delayed domestic call.

At the close of the year, transportation was still badly crippled, but showed a tendency to very gradual improvement. Restricted delivery and a steadily better demand for both industrial and domestic fuels was maintaining the price satisfactorily, though actual profits still were low because of the distribution of the overhead to a limited tonnage.

The domestic supply is urgent, as less than 50 per cent of the household needs for the winter have been delivered, the delay being due largely to the expectation of the lower prices with the anticipated improvement of car conditions.

Columbus Spot Prices, 1922, F. O. B. Mines, Net Tons.

	Jan.	Feb.	March	April
Pocahontas Lump	$3.25-$3.60	$3.15-$3.40	$3.00-$3.25	$2.65-$2.90
M. R.	2.00- 2.30	2.00- 2.20	1.75- 2.00	1.85- 2.00
Screen	1.35- 1.65	1.40- 1.65	1.35- 1.50	1.30- 1.50
Kanawha Lump	2.75- 3.10	2.50- 2.80	2.25- 2.75	2.25- 2.40
M. R.	1.65- 1.95	1.50- 1.85	1.50- 1.75	1.45- 1.70
Screen	1.35- 1.60	1.20- 1.40	1.30- 1.45	1.40- 1.60
Hocking Lump.....	2.75- 3.00	2.50- 2.80	2.50- 2.70	2.50- 2.75
M. R.	1.70- 1.95	1.75- 2.00	1.75- 2.00	1.65- 1.90
Screen	1.35- 1.65	1.25- 1.40	1.40- 1.60	1.40- 1.65

	May	June	July	Aug.
Pocahontas Lump	$2.75-$3.00	$3.40-$3.60	$3.85-$4.00	$3.75-$8.50
M. R.	2.75- 3.00	3.25- 3.40	3.50- 4.00	3.50- 8.00
Screen	2.75- 3.00	3.00- 3.25	3.25- 3.60	3.25- 8.00
Kanawha Lump	3.00- 3.25	3.25- 3.50	3.75- 4.25	3.75- 8.00
M. R.	2.75- 3.00	3.15- 3.35	3.50- 3.85	3.50- 7.50
Screen	2.85- 3.00	3.15- 3.35	3.25- 3.50	3.25- 7.50
Hocking Lump	2.65- 3.00	3.25- 3.50	3.75- 4.00	3.75- 8.50
M. R.	3.00- 3.50	3.00- 3.25	3.75- 4.00	3.50- 8.00
Screen	3.00- 3.45	3.00- 3.25	3.60- 3.80	3.25- 7.50

	Sept.	Oct.	Nov.	Dec.
Pocahontas Lump	$6.00-$6.50	$6.50-$7.00	$6.50-$7.25	$6.00-$6.50
M. R.	5.50- 6.00	5.75- 6.25	6.00- 6.50	5.75- 6.25
Screen	5.25- 5.75	5.25- 5.75	5.50- 6.25	5.25- 5.75
Kanawha Lump	5.50- 6.00	6.00- 6.50	5.50- 6.25	5.00- 5.50
M. R.	5.25- 5.75	4.25- 4.75	4.00- 4.50	3.00- 3.50
Screen	5.00- 5.65	3.50- 3.75	3.50- 3.75	2.65- 3.00
Hocking Lump.....	5.50- 6.00	5.25- 5.65	5.25- 5.75	4.50- 5.00
M. R.	4.75- 5.50	3.25- 3.75	3.25- 3.75	2.50- 2.75
Screen	5.00- 5.50	3.00- 3.50	2.75- 3.25	2.40- 2.60

CHICAGO IN 1922

Hard Year, With Weather to Contend With and Miners' Strikes—General Conditions Were Right for Better Business.

The year 1922 has been far from an easy one for the Chicago coal men and this applies to the retailers, wholesalers and operators alike. None of the concerns who depend upon the unionized mines for coal would like to repeat the experiences of 1922. Five months of the twelve might be termed near-normal business, but it is an unusual concern which can operate profitably for five months and operate at a loss for the remaining seven months of the year and still be able to look back and say "It was a good year for us."

As a matter of fact it was not a good year for the Chicago coal trade; quite to the contrary it was a hard year with the weather an adverse feature and the coal miners' strike to contend with. Coupled with this was the continual up and down movement in demand on part of consumers, taking the form of periods of buying which rushed the mines to capacity, burdening traffic and boosting prices, and then the reverse.

Had it not been for the long-drawn-out miners' strike commencing April more than likely the Chicago market would have enjoyed a good normal year, for general conditions were right for better business in the Middle-West.

The opening months of the year found the average retailer as well as the big users of steam coal with very low stocks. As the talk of a miners' strike grew from day to day, these concerns gradually commenced to lay aside supplies to tide them over a period of thirty, sixty or ninety days, according to their judgment of the duration of the shutdown at the mines. This developed an active market before the opening day of the strike and the first three months of the year were recorded as "good months" for the coal men. Then came the deadlock between the operators and miners and all union mines stopped work.

Non-Union Coal Eagerly Sought.

At this juncture the non-union operators stepped into the Chicago market and had little trouble disposing of all coal they could produce. Western Kentucky coals formed the bulk of the coal supplies of the Middle-West during the months of the strike. Eastern Kentucky coals occasionally came to the market, the price and freight rates favoring the mines in the western part of that state and consequently the Chicago business was turned their way.

Following the strike the market gradually improved, becoming active occasionally and then dropping back into periods of dullness and it was not until late in the year, the second week in December, that the market took on a permanently active and healthy condition.

It was estimated that towns in this section of the country did not receive more than one-third of their normal supply of anthracite this year, and there are many towns not far from Chicago that have not received *one* car of anthracite since last February. It is a regrettable thing, but a fact nevertheless, that the failure of anthracite mines to produce the coal necessary during the year has caused many consumers who formerly used nothing but anthracite, to turn to some substitute or other.

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Many home owners in the fall installed oil burning heating equipment while others found it necessary to use gas for heating purposes. It is doubtful if such people will turn back to anthracite. One Chicago wholesaler dealing extensively in anthracite said, "It is not the business we have lost in the fall by inability to supply hard coal that is worrying me, but rather the business we have permanently lost by forcing the users to find substitutes for our product."

Record of Untiring Effort.

As far as the operators were concerned, their business during the year is best explained by the president of the Illinois Coal Operators' Association, Fifth and Ninth Districts, Mr. Krause, who said, "The record of the past year is a record of untiring effort on the part of the operators to continue the operation of their mines under favorable economical and competitive conditions and to assure the miner a fair wage—not deprive him of a fair wage."

It is a fact that the operators have striven continually to put to rest the disturbing factors which have caused continual strife in the coal industry between the miners and operators.

Production in both Indiana and Illinois for the year stands at low figure, not only due to the miners' strike, but due to the serious car shortage, a condition which confronted them since the ending of the strike. The supply of cars at the mines was far from normal, and anything but adequate to cope with the increased demand upon operators for supplies during the last two months of the year.

The fall months of the year were anything but encouraging to the coal men. The weather in the Middle West was the mildest of any fall for many years, and it was not until the first cold spells in December when the ttemperature dropped to zero, that the local trade experienced any real frantic call for coal.

When general business conditions during the past year are reviewed with their general expansion and improvement, it is a discouraging thing to realize that the coal men were not in a position to reap the increased business which otherwise would have been theirs.

Trade with country points was much better during the year just closed than it was during 1921, regardless of the strike and other adverse conditions. This is attributed to the fact that the farmers have been in a better position to buy. Farm products have brought a better price and the small town merchants, including the coal dealers, have enjoyed a healthy and increasing business from the farmers.

Labor in the Central West, especially in Chicago, turned during the year from a position of large surplus to an actual shortage of skilled and unskilled help. This developed a greater circulation of money and reflected its influence on the manufacturing business and improved trade in general.

This year Chicago had the biggest building boom since before the war. Never in recent years has the amount of money spent for construction of office and housing buildings equalled the total of 1922. This meant more homes and office buildings to heat, meant labor for the people of Chicago and made it possible for the coal men to develop new business that did not heretofore exist.

With the constant improvement in general business experienced during the twelve months of 1922, the coal men of Chicago should enjoy a good year during 1923, barring a strike at the mines.

Mine Prices at Chicago, 1922.

	Jan.	Feb.	March	April	May	June
Pocahontas lump	2.50–3.75	2.75–3.50	3.00–3.25	2.25–2.75	2.75–3.00	3.25–
" M. R. ..	2.00–3.00	1.75–2.50	1.75–2.00	1.60–1.75	2.75–3.00	3.00–3.25
Franklin, Ill. lump ..	3.00–4.05	3.00–3.65	3.25–3.65	3.00–3.65	3.65–4.25	
" M. R. ..	2.65–3.00	2.25–2.75	2.25–2.65	2.50–3.00	4.00–4.25	
" Screen ..	1.75–2.25	1.75–2.25	1.75–2.00	2.50–3.00	4.00–4.25	
Central Ill. lump ...	2.75–3.50	2.75–3.25	2.65–3.00	.....	.....	
" M. R. ..	2.25–2.75	2.25–2.50	2.25–2.50	.....	.....	
" Screen ..	1.65–2.00	1.70–1.90	1.65–1.85	.....	.....	
Ind. 4th Vein lump..	3.00–3.75	3.00–3.50	3.00–3.50	3.00–3.25	.....	
M. R. ..	2.40–2.75	2.35–2.65	2.35–2.50	2.25–2.75	.....	
Screen ..	1.90–2.25	1.85–2.10	2.00–2.25	2.00–2.50	.....	
Ind. 5th Vein lump ...	2.60-3.25	2.60-3.75	2.65-3.00	2.50-2.75	.....	
M. R. ..	2.15–2.40	2.10–2.40	2.15–2.50	2.50–2.75	.....	
Screen ..	1.50–1.85	1.65–1.85	1.50–1.75	2.25–2.50	.....	

	July	Aug.	Sept.	Oct.	Nov.	Dec.
Pocahontas lump	4.00–4.25	3.75–8.00	5.00–7.50	5.00–7.00	6.50–8.00	7.00–9.00
" M. R. ..	4.00–4.25	3.50–8.00	4.75–7.00	4.75–6.50	5.75–6.00	5.75–6.00
Franklin Ill lump ..	.....	.....	5.25–5.50	5.25–5.50	5.25–5.50	5.50–5.75
" M. R. ..	.....	.....	4.50–5.00	4.25–4.75	4.00–4.25	4.40–4.60
" Screen ..	.....	.....	4.35–4.50	3.00–3.50	2.25–3.00	2.60–3.30
Central Ill. lump ...	.....	.....	4.90–5.25	5.00–5.25	4.50–4.90	4.80–5.20
" M. R. ..	.....	.....	4.35–4.75	3.25–4.00	2.70–3.00	3.00–3.20
" Screen ..	.....	.....	3.50–3.75	2.00–2.75	1.50–1.75	1.75–2.10
Ind. 4th Vein lump..	.....	.....	5.00–5.50	5.00–5.25	4.75–5.00	5.00–5.50
M. R. ..	.....	.....	4.65–5.00	3.50–4.00	3.25–3.75	3.60–4.00
Screen ..	.....	.....	4.50–4.75	2.75–3.00	1.90–2.25	2.20–2.50
" 5th Vein lump..	.....	.....	4.90–5.25	5.00–5.25	4.30–4.50	4.80–5.10
M. R. ..	.....	.....	4.50–4.75	3.50–4.00	2.00–2.25	2.50–2.75
Screen ..	.....	.....	4.25–4.50	2.75–3.00	1.60–1.80	2.00–2.20

Chicago Freight Rates.

The new freight rates on coal to Chicago from the various producing points, effective July 1st, 1922, compared with the old rates, are as follows:

	Old	New		Old	New
Central Illinois	$1.81	$1.65	W. Va. (Pocahontas)	3.58	3.24
Southern Illinois	2.17	1.95	East Kentucky	3.43	3.09
Belleville, Ill.	2.06	1.85	West Kentucky	2.40	2.16
Brazil, Ind.	1.78	1.60	Ohio Hocking	3.18	2.86
Sullivan, Ind.	1.88	1.69	Anthracite (Penn. net tons)	5.63	5.07
W. Va. (High Vol.).....	3.43	3.09			

Bituminous exports from Arizona Customs District during 1922 amounted to 19,926 tons. Coke tonnage amounted to 27,101 tons and anthracite 3,019 tons.

MINNEAPOLIS-ST. PAUL MARKET IN 1922

Several Months of Unsatisfactory Business for Bituminous Trade—Competition Between Dock Coal and All-Rail Tonnage.

The coal trade made a good start toward repeating the seven lean years of the ancient Egyptians, though there are some in the trade who hope that the period may be shortened. The year 1922 was lean to the point of cadaverousness. It has been almost without any time that might be deemed satisfactory. When orders were plentiful, there was great difficulty in handling them, either through shortage of supplies or car equipment, or both.

Most of the time there was a fairly general refusal to buy, until the point of compulsion. In common with other commodities, fuel has been enduring the stressing both ways while commerce in general has been struggling with deflation. Because of the strikes, deflation has been impossible in coal, and the prolonged reconstruction period was sullenly and reluctantly endured by consumers in this district.

The close of the season was a heritage of distrust and doubt. Consumers, large and small, stood pat as long as they could (and they showed marvelous endurance), bought most sparingly and repeated their waits. Even with every assurance that April 1st would see a general strike at the mines producing both hard and soft coal, the buying public of the Northwest retreated to their respective caves and waited for the storm to blow over. They could see no danger for themselves, and as for the rest of the fuel-using public that was their worry. In the spring the docks of the Northwest had a goodly store of soft coal, 4,000,000 tons or so, and a moderate quantity of hard coal.

That tonnage seemed a great plenty for any possible need during the summer, and no one doubted that the strikes would be over and forgotten long before fall. So firm was this feeling that when jobbers tried to induce laying in a portion of this reserve, steam users indicated that they were going to buy cheaper at a future date. It was an ideal view, if it worked, that of breaking the market with the other fellow's capital and wares. And anyway, it was reasoned, coal could always be had, so why worry?

Shortage of Lake Coal Causes Panic.

But if coal users in this district held that view, those who were closer to the Illinois mines did not continue to adhere to it. They concluded that preparedness was the beginning of wisdom, and bought much of this reserve, and their wisdom proved to be well established. When finally the Northwest awoke to the fact that the summer was over and gone, many people found that thrifty neighbors had not scorned to pay the price that was asked for coal during the strike, and the reserve was cut in half and less. Great and strenuous were the complaints which rose to heaven over the situation. There was a procession of politicians traveling between Minnesota and Washington, D. C., which must have increased the coal consumption of the railroads to haul them. The Northwest was represented to be a near outpost of the North Pole, and needing fuel eleven or twelve months of the year. Medicine Hat, before it was dethermalized of the most frigid reputation

records, was hardly worse than the Northwest was declared to be, as to need of fuel.

And the officials, ever ready to oblige, accommodated with now and then a priority, and ever and anon an essential classification; and yet again with an embargo. It was indeed an hypercritical individual who would complain, after all this attention, that it produced no coal. Yet it did not. The strikes were ended and coal production resumed. Fair prices, and some less fair, were established; but when the Northwest sought to buy at the bottom of the market they encountered a market which had no bottom, seemingly entirely lacking in that angle of dimension.

So the fall approached and the need of coal developed. There had been some coal reaching the Northwest from non-union mines during the summer, but not a great deal, and when resumption of mining became general, buyers revived their ideas that they could presently buy a great deal cheaper. Small receipts began moving to the Northwest, bought in competition with buyers in other districts, and at high prices. Some was not of the best quality, for when there are ten buyers to every lot offered it is not the time to haggle over quality.

Competition Between Dock and Rail Interests.

They had been encountering the keenest of competition from the all-rail shippers, and had seen their market area reduced more and more as rail coal became more plentiful. The demand for the all-rail product from the territory intervening between the mines and the Northwest had been supplied, and the coal available went farther and farther into this section. The question was asked, If there were such a supply available in the Northwest when cars were scarce, what might be expected with cars plentiful?

Then followed the keenest of competition. Dock concerns found that they had to reduce prices to move their tonnage, and did so, while all-rail shippers discerned that they could not hold their own and maintain prices at all times.

So far as the coal business is concerned, the overhead has been high and the tonnage low for the season. As a result, costs have had to be carried on a reduced output and were thereby increased. But the salability of steam coal has been based almost wholly on reduced prices, and much coal has had to be moved upon that basis.

After a prolonged mild fall, December finally developed some winter weather, and with it came a real demand for coal, which steadied the market and soon cleaned up surplus offerings. Screenings, which had been nearly hopeless for weeks, steadied and advanced sharply. Regular sizes of steam coal also rose up to the point where they could meet list prices on an equality. But the minute this sort of weather waned, the demand for coal did likewise and a surplus became available again.

Anthracite, however, is a law unto itself. There is no competing field to unsettle its market nor to take the edge from its consumption. Substitutes exist, but they are resorted to, under protest. The tonnage of hard coal has been hardly increased over what would naturally come during the period since mining was resumed. Receipts to the close of navigation were about one-third of last year's. Despite all savings from mild weather and diverted consumption to substitutes, there still remained at end of the year a shortage of perhaps 300,000 to 400,000 tons.

Bituminous Coal Exports to West Indies.

Cuba.

Month	1918	1919	1920	1921	1922	Average Price 1919	1920	1921	1922
January	76,938	103,639	99,620	55,033	41,240	$6.60	$6.42	$8.15	$5.14
February	145,104	40,644	130,846	42,213	50,101	6.45	6.54	7.33	5.26
March	170,087	38,107	115,982	74,963	57,258	6.42	7.05	7.01	5.56
April	212,355	58,173	118,654	28,346	47,144	5.90	7.28	5.09	4.99
May	137,048	90,112	113,861	14,345	38,020	5.48	8.17	6.72	5.15
June	110,959	84,198	107,609	71,750	17,517	5.44	10.07	6.73	5.94
July	105,137	75,085	94,019	33,282	22,500	5.68	11.57	6.45	5.53
August	105,408	108,216	123,610	48,318	10,629	5.95	14.49	6.75	5.91
September	98,022	140,546	125,156	31,748	31,709	6.12	12.24	5.87	7.15
October	89,941	115,366	115,380	43,328	48,702	6.34	11.41	5.84	7.02
November	99,679	59,835	117,976	28,014	34,973	6.79	11.16	5.75	6.30
December	89,779	57,478	69,919	53,262	64,065	6.25	9.90	5.30	6.60
Total	1,440,457	977,399	1,322,632	524,572	463,858	...	...	...	...

Other West Indies.

Month	1918	1919	1920	1921	1922	Average Price 1919	1920	1921	1922
January	9,089	16,360	23,212	10,273	10,872	$6.18	$6.72	$9.48	$5.03
February	13,313	16,965	31,485	3,848	437	6.53	6.33	7.96	5.35
March	45,213	21,548	42,720	1,335	19,237	6.23	6.49	6.40	4.90
April	28,063	31,302	34,843	16,374	21,313	5.70	7.50	5.77	4.90
May	25,717	11,914	17,670	2,986	12,018	5.39	7.52	6.61	5.11
June	25,944	30,136	15,819	14,421	6,593	5.61	8.27	6.76	6.15
July	19,438	21,675	23,335	7,792	5,263	6.00	9.12	6.66	6.45
August	12,367	36,799	35,917	7,355	7,899	6.03	12.01	6.52	6.50
September	21,026	29,699	38,324	3,653	1	6.67	11.24	6.50	9.00
October	12,064	37,157	30,063	7,827	6,704	6.38	11.96	5.98	7.30
November	21,028	10,345	44,715	12,452	2,937	7.35	11.27	5.74	6.87
December	21,239	19,633	32,124	11,940	10,644	6.69	10.10	5.08	7.10
Total	254,501	274,511	422,313	100,256	103,918	...	...	...	...

Michigan Customs District Exports.

Month	Anthracite 1921	Anthracite 1922	Bituminous 1921	Bituminous 1922	Coke 1921	Coke 1922
January	303	247	117,286	97,576	7,087	8,781
February	417	1,124	138,281	43,588	6,960	10,257
March	5	413	104,807	153,085	6,450	11,720
April	5	375	108,840	72,780	6,293	10,263
May	400	298	100,411	87,617	5,634	10,632
June	111	264	90,222	151,849	5,253	13,344
July	51	96	80,232	85,967	4,655	15,985
August	726	206	98,499	71,665	6,487	8,219
September	20	254	66,923	140,993	5,987	13,593
October	268	64	85,445	124,332	8,902	5,904
November	290	...	118,196	16,494	8,630	2,105
December	288	76	87,738	204,148	5,256	18,673
Total	2,884	3,417	1,196,883	1,250,094	77,594	129,466

Coal Traffic at St. Louis, Mo.

The coal supply of St. Louis is derived almost entirely from mines within a short distance of that city, and is received via the railroads which traverse the southern part of Illinois. Although Missouri is a State of important coal production, none of its tonnage is shipped to the largest city in that State. In fact St. Louis occupies a unique position of isolation so far as the meeting of its coal requirements is concerned, and probably no other large city obtains its coal at such small expense for freight.

Receipts of coal by the several lines of railroads, etc., are thus given by the secretary of the Merchants' Exchange:

Route	1918	1919	1920	1921	1922
Missouri Pacific R. R.	134,802	205,794	234,395	125,789	121,856
Balt. & Ohio S. W. R. R.	884,374	948,235	782,336	543,254	514,436
C., C., C. & St. Louis Ry.	127,346	105,273	143,277	187,279	146,324
P., C., C. & St. L. R. R.	569,011	481,872	631,097	656,648	556,140
Illinois Central R R.	1,787,691	927,234	959,526	1,940,530	2,194,932
Wabash Ry.	230,250	86,004	257,664	172,945	199,710
Louisville & Nashville R. R.	1,247,660	1,020,271	1,013,862	894,147	1,085,699
Southern Ry.	1,400,248	759,859	508,357	360,522	362,068
Mobile & Ohio R. R.	699,850	523,700	808,000	442,850	302,750
Tol., St. L. & West'n R. R.	13,434	169,453	35,160	8,356	27,810
St. Louis & O'Fallon R. R.	1,092,332	541,378	1,131,488	791,494	758,048
St.L.,I.M. & S. Ry. (Ill. Div.)	884,254	638,607	720,227	503,554	508,192
St. L., Troy & Eastern Ry.	1,015,343	463,390	998,032	648,869	503,463
St. L. & Belleville Elec. Ry.	519,756	311,640	493,087	326,939	385,012
Chicago & Eastern Ill., R. R.	67,438	48,721	20,425	23,245	22,321
St. Louis-San Francisco Ry.	107,598	86,896	113,239	66,766	64,455
C., B. & Q. R. R. (East)		671,030	318,525	1,228,650	1,009,350
C., B. & Q. R. R. (West)		3,750	66,840	235,760	194,800
C, P. & St. Louis, R. R.		950	600	.....	.....
Litchfield & Madison Ry.	870,695	626,877	958,726	453,730	550,440
East St. L. & Sub. R. R.	914,077	481,264	896,836	421,782	401,738
Illinois Traction System	339,596	400,790	401,240	299,600	299,450
C. & A. (Ill. Div.)	.....	.....	.....	.....	11,135
C. & A. (Mo. Div.)	.....	.....	.....	.....	882
Total Tons	12,905,755	9,503,438	11,492,939	10,332,739	10,221,011

Receipts of Anthracite Included in Above.

Year	Tons	Year	Tons	Year	Tons
1908	236,036	1913	274,423	1918	64,515
1909	236,040	1914	174,694	1919	114,918
1910	289,463	1915	189,478	1920	155,691
1911	487,030	1916	172,832	1921	111,038
1912	277,683	1917	163,789	1922	60,813

Of the anthracite receipts part was "shipped through," or 14,721 tons in 1922 as compared with 21,746 tons in 1921.

Receipts of coke.

Year	Tons	Year	Tons	Year	Tons
1908	162,280	1913	190,857	1918	168,205
1909	171,570	1914	139,296	1919	97,809
1910	191,190	1915	121,389	1920	128,701
1911	192,245	1916	215,025	1921	167,950
1912	190,370	1917	217,236	1922	293,175

Receipts of Coal at Milwaukee.

Receipts of anthracite and bituminous coal at Milwaukee, Wis., by months, during the calendar year 1922 were:

Month	By Vessel		By Car Ferry		By Rail		Grand Total
	Hard	Soft	Hard	Soft	Hard	Soft	
January	.....	.....	7,113	15,394	496	47,424	70,427
February	.....	.....	13,599	35,216	...	36,335	85,150
March	.....	.....	30,769	47,146	...	36,853	114,768
April	700	107,609	9,546	27,858	...	26,594	172,307
May	.....	195,251	1,965	5,340	...	24,250	226,806
June	.....	303,401	2,455	5,668	129	23,868	335,392
July	.....	167,499	1,809	7,619	...	26,342	203,269
August	.....	78,852	2,878	19,232	34	22,886	123,848
September	.....	438,343	1,560	11,816	50	38,806	490,575
October	141,414	654,945	12,634	34,546	120	56,842	900,501
November	128,139	331,765	12,162	31,463	...	40,840	544,369
December	89,817	53,242	12,130	31,366	50	48,985	235,590
Total net tons.	360,070	2,331,407	108,620	272,664	879	428,805	3,502,445

Receipts of coal at Milwaukee, Wis., during calendar year 1922 and five years previous were:

Coal	1917	1918	1919	1920	1921	1922
Anthracite ...	927,266	839,092	985,692	873,003	1,022,645	360,070
Bituminous ...	3,014,317	3,446,061	3,174,078	2,375,178	2,574,074	2,331,407
Total Lake..	3,941,583	4,285,153	4,159,770	3,248,181	3,596,719	2,693,477
By all-rail	987,482	728,851	532,936	1,154,964	1,820,178	429,684
By car ferries.	238,191	174,163	309,350	393,332	395,238	381,284
Total	5,167,256	5,188,167	5,002,056	4,696,477	4,765,568	3,502,445

Cleveland Bituminous Prices for 1922.

Pittsburgh No. 8—

	Jan.	Feb.	March	April	May	June
Lump.	$3.00-$4.00	$3.00-$3.25	$3.00-$3.10	$3.00-$3.75	$3.00-$3.50	$4.00
M. R..	2.05- 2.15	1.95- 2.00	1.85- 1.90	2.25- 2.45	3.00- 3.45	3.60- 3.75
Screen.	1.90- 2.00	1.60- 1.70	1.75- 1.80	2.00- 2.40	3.00- 3.45	3.60- 3.75

Pittsburgh No. 8—

	July	Aug.	Sept.	Oct.	Nov.	Dec.
Lump.	$4.50-$5.00	$7.00-$7.50	$4.75-$5.00	$3.81	$3.81	$3.75-$4.50
M. R..	4.25- 4.50	7.00- 7.50	4.50- 4.75	3.56	3.56	3.00- 3.25
Screen.	4.25- 4.50	7.00- 7.50	4.50- 4.75	3.31	3.31	2.75- 3.00

WEST VIRGINIA

West Virginia is the second largest coal producer in the Union, being well entrenched in this prominent position as the result of a dozen years' steady progress after it first surpassed Illinois, long its rival for second place. The trade of West Virginia is interesting, not only because of its extent, but because of the variety of coal found within its borders.

In the northern part of the State there is the Wheeling district where a localized industry is carried on, and near to the eastern boundary the Upper Potomac field, rather closely identified with the coal interests of Maryland. The important district in Northern West Virginia is the Fairmont, which is not only one of the largest producers in the State but one of the oldest. The larger part of the tonnage is produced in southern West Virginia, as there are two important districts there, the New River and the Pocahontas, and tributary to these are minor districts: the Kanawha, adjacent to the New River field, and the Tug River, Thacker and Kenova are more or less adjacent to the Pocahontas field and likewise served by the Norfolk & Western Ry. The Kanawha district is an old-established seat of the mining industry, dating back to the time when the only outlet was by water, and, as our records show, a certain amount is still forwarded by boat. But the New River field dates from the opening of the Chesapeake & Ohio Ry., as the fields further south date from the opening of the N. & W.

Naturally, the early records of coal mining in West Virginia are merged with those for the State of Virginia, so that the records for the new State commence with the important tonnage of 444,648 tons for the year 1863. Considering the vicissitudes of mining in other States remarkably successful progress was made in West Virginia. The 1,000,000-ton mark was reached in 1873; the 2,000,000-ton mark in 1882, and with rapid strides the output increased beyond that point, gaining nearly a million tons a year and going far beyond 10,000,000 tons in 1893. From this point it took but seven years to reach the 20,000,000 ton mark; only five years more to get up to 32,000,000 tons, and from then on every year has shown great progress.

The development of the State as a coal producer has been due largely to the interest taken in the industry by the railroad companies serving the section. It was frequently asserted in prior years that the coal areas were opened in advance of requirements in order to afford tonnage for the railroads, and certainly they secured it, even though the mining interests of Pennsylvania and Ohio had to face very strong opposition because of that fact. And not only was capital forthcoming in ample volume because of railroad influence, but the most energetic sales organizations were established with a view to building up business with the least loss of time.

For years the Baltimore & Ohio was closely identified with important interests in the northern part of the State; the Chesapeake & Ohio with those of the New River field, and the Norfolk & Western with interests in the more

southerly part of the State. But it is now 20 years since in deference to public opinion and subsequent legislation the railroad interest has gradually been relaxed and in that time many entirely independent interests have been added to the number of companies not originally associated with the transportation interests.

In fact, the producing interests of West Virginia are notably diversified, there being very few companies of such predominating influence as are to be found in certain sections of the State of Pennsylvania and any other of very large coal producing States.

The tonnage produced has been as follows in recent years:

Year.	Tons.	Year.	Tons.	Year.	Tons.
1911	59,831,580	1915	77,184,069	1919	79,036,553
1912	66,786,687	1916	86,460,127	1920	89,450,707
1913	71,308,982	1917	86,441,667	1921	72,200,000
1914	71,107,626	1918	89,935,839	1922	81,000,000

Over the past half century the records show:

Year.	Tons.	Year.	Tons.	Year.	Tons.
1863	444,648	1883	2,335,833	1903	29,337,241
1868	609,227	1888	5,498,800	1908	41,897,843
1873	1,000,000	1893	10,708,578	1913	71,308,982
1878	1,120,000	1898	16,700,999	1918	91,350,000

Production by Districts.

Summary of production of coal by geographical districts for the fiscal years ending June 30th, 1919, 1920, 1921 and 1922:

District	1919	1920	1921	1922
Panhandle District	2,903,019	3,367,144	4,079,344	3,796,904
Fairmont District	11,313,774	12,864,984	14,666,409	9,625,112
Preston-Barbour District	4,609,937	5,432,647	4,917,955	3,066,657
Elk Garden District	2,549,044	2,430,428	2,453,986	1,080,042
Mason District	128,352	180,833	242,480	48,253
Putnam District	285,075	328,791	260,102	170,552
Kanawha District	10,234,964	10,370,553	10,237,876	6,110,150
New River District	11,850,513	12,948,529	13,740,070	11,900,162
Logan District	9,726,145	10,252,098	10,861,391	13,904,980
Pocahontas District	18,791,559	18,037,736	17,449,819	18,354,975
Mingo District	2,483,111	2,777,573	1,152,172	2,130,416
Small Wagon Mines	1,000,000	1,000,000	700,000	700,000
Total	72,943,359	78,991,316	80,061,604	70,188,203
Grand Total	73,943,359	79,991,316	80,761,604	70,888,203

Production by Counties.

We give below figures of production by counties (gross tons) for the fiscal years ended June 30, 1922, and five previous years, compiled by the State Department of Mines:

County	1917	1918	1919	1920	1921	1922
Barbour	1,306,983	1,362,068	1,308,167	1,522,606	1,548,949	817,057
Boone	720,868	1,061,602	1,248,408	1,483,493	1,475,721	958,912

County	1917	1918	1919	1920	1921	1922
Braxton	286,594	255,774	309,108	286,955	235,537	213,108
Brooke	727,069	979,151	1,326,429	1,361,652	1,574,050	1,369,276
Clay	483,463	445,862	449,434	498,427	488,778	741,608
Fayette	9,555,518	8,828,080	8,062,099	7,775,011	7,846,189	4,418,605
Gilmer	119,151	71,159	88,675	97,238	86,884	115,808
Grant	267,269	263,653	122,476	236,187	242,712	74,663
Greenbrier .	45,207	37,311	33,695	52,398	52,153	475,601
Harrison ...	4,675,411	4,875,435	4,712,132	5,099,091	5,247,547	2,629,886
Kanawha ...	5,577,677	5,758,926	5,176,533	5,414,911	5,209,368	2,424,518
Lewis	20,640	33,830	32,349	66,499	67,266	115,808
Lincoln	200,179	238,472	206,255	240,843	272,994	160,309
Logan	8,859,122	9,229,975	9,342,441	9,824,785	10,367,205	13,645,970
Marion	5,125,390	4,533,466	4,400,008	4,887,841	5,019,933	1,230,668
Marshall ...	1,119,927	942,974	939,281	947,602	1,067,241	1,116,798
Mason	157,241	174,097	128,352	180,833	242,480	48,253
McDowell ..	18,671,942	17,812,416	16,209,411	15,817,700	15,124,423	15,180,421
Mercer	3,225,429	2,949,936	2,582,148	2,220,036	2,325,396	3,174,504
Mineral	697,242	781,281	462,253	466,029	367,148	157,515
Mingo ...	3,207,162	3,104,419	2,457,937	2,707,657	1,095,828	2,061,210
Monongalia .	751,403	1,687,153	2,158,219	2,878,052	4,398,929	5,764,558
Nicholas	176,455	199,611	148,099	233,602	212,086	284,818
Ohio	643,358	741,076	637,309	1,057,890	1,418,053	1,310,830
Preston	1,106,378	1,400,961	1,325,451	1,704,579	1,439,506	939,869
Putnam	508,489	426,633	285,075	328,791	260,102	170,552
Raleigh	6,304,282	6,790,765	6,316,678	6,918,423	7,728,329	7,518,550
Randolph ...	708,638	874,760	847,257	789,942	775,869	369,730
Summers ..	.....	.....	.....	30,029	27,818	7,915
Taylor	1,270,182	1,177,536	1,021,539	1,048,187	759,236	310,798
Tucker	1,214,964	1,297,211	1,117,058	938,270	1,068,257	478,134
Upsur	146,762	283,438	423,816	526,981	599,335	525,555
Wayne	60,441	89,970	25,174	69,916	56,344	69,206
Webster	.....	.....	6,599	7,371	5,238	16,908
Wetzel	.....	.....	43,415	.....	.....	.....
Wyoming ..	852,034	1,085,915	897,103	1,271,489	1,329,700	1,481,103
Small mines.	1,000,000	1,000,000	1,000,000	1,000,000	700,000	700,000
Total gross	79,806,652	80,041,640	75,875,493	79,991,316	80,756,604	70,888,203

Coal Used by Power Plants

Monthly consumption of fuel in the production of electricity by public utility power plants in the United States in 1922 was as follows:

Month	(Net tons)	Month	(Net tons)	Month	(Net tons)
January	2,953,540	May	2,471,123	September	2,898,986
February	2,593,259	June	2,486,099	October	3,275,204
March	2,723,561	July	2,563,580	November	3,350,761
April	2,456,592	August	2,816,878	December	3,586,346
				Total	34,175,929

Illinois.

The coal fields of Illinois cover a large portion of the State and the industry has an interesting history. The coal in the most northerly, or La Salle, district was the first referred to by any explorer traversing this country, Father Marquette, 1676.

The coal in the upper counties, in some areas well within 100 miles of Chicago, was in the early days, at least, very near the surface and, as is generally the case in such instances, of poor quality. Much of this having been mined out, recourse has been had to the seams in other fields.

As one traverses to the southward, passing through the Fulton, Springfield, Belleville, Murphysboro and Franklin districts down to the Harrisburg field, the coal is found at increasing depth, but the improvement in the quality of it is such as to well repay the greater investment and the greater expense of operation. Off to one side, adjacent to the Indiana boundary, is the Danville field.

The level surface of Illinois, as well as its central position on the map, led to a vast amount of railroad building in the State, affording at once a tremendous home market for coal and a great outlet to markets beyond the State lines.

The first recorded output was 6,000 tons in 1833. The business had grown to 150,000 tons in 1845, and reached the million mark in 1864. The influence of Western railroad development is plainly discernible from that time on, the output reaching the two million ton mark in 1868, the three million ton mark in 1871 and the five million ton mark in 1876. From the frequency with which round numbers appear it is evident no very definite record of output was kept prior to 1880. In 1883 the tonnage had reached 12,000,000 tons, and after that time various fluctuations occurred which retarded the growth so that the 20,000,000 mark was not reached until 1897. There have been ups and downs in the meantime, but the average yearly progress has been great, the output increasing to 51,000,000 tons in the next 10 years, and great progress has been made in the intervening time, as our tables show.

Production in following years was:

Year.	Tons.	Year.	Tons.	Year.	Tons.
1914.....	57,589,197	1917.....	86,199,387	1920	88,630,893
1915.....	58,829,576	1918.....	89,291,105	1921	69,602,762
1916.....	66,195,336	1919	60,862,608	1922	59,100,000

Oregon.

Oregon is one of the smallest coal producing States, probably the least important of those in which mining is conducted on a regular commercial basis.

There is a record of an output of 43,205 tons as far back as 1880, but a production of 100,000 tons was not attained until 1896, and since then the tendency has been downward more often than upward, so that the output is now less than it was 40 years ago, being only about 30,000 tons a year.

The mines are in the vicinity of Coos Bay from which, at one time, shipments to San Francisco could be made to good advantage. Development of oil in California, however, practically put a quietus on the coal industry.

Maryland.

The coal deposits of Maryland represent one of the oldest fields of exploitation. Although always, in modern days, a comparatively small factor considered from the tonnage standpoint, the high quality of the greater part of the Maryland coal and its proximity to important consuming centers have caused it to play an important part in the coal trade of the Atlantic seaboard.

The coal fields are in the western part of the State beyond Cumberland, the entire section being formerly known as Allegany County. Subsequently Garrett County was set off, embracing all the territory beyond the summit near Frostburg. The Georges Creek basin, the most important, lies about two-thirds in Allegany County and one-third in Garrett County. Further west is found the Castleman basin and at the extreme western part of the State are the Lower Youghiogheny basin and the Upper Youghiogheny basin. But the only important active coal operations are in the first named district.

There is record of coal mining in Maryland at the very outset of the 19th Century and as early as 1832 an output of 12,000 tons was recorded. While an increased output was shipped as soon as the Baltimore & Ohio Railroad reached Cumberland, which was in 1842, the real developments did not come until later on, in the year 1850, when the Chesapeake & Ohio Canal was built, as well as branch lines from Cumberland, which afforded quite extensive facilities to the coal operators of the Georges Creek field.

The output rose from 175,000 tons in 1849 to 812,000 tons in 1854, at which time Maryland was exceeded as a coal producer only by Pennsylvania and Ohio. Notwithstanding the great demand for coal during the Civil War, the fact that the Baltimore & Ohio Railroad was often cut by the Confederates kept down the output materially, but in 1865 it passed the million mark and even then Maryland ranked as the fourth State, being surpassed only by Pennsylvania, Ohio and Illinois.

An output of 2,216,000 tons was attained in 1869 and 3,198,000 in 1873. After that the region experienced marked vicissitude and not until 1887 was the latter figure surpassed. The 4,000,000 ton mark was exceeded in 1896, but by this time West Virginia and Alabama had been added to the list of large producers and the relative importance of Maryland was decreasing.

The output of 1901 exceeded five million tons, as did that of 1902, 1905, 1906, 1907 and 1910, but no time since then has so large an output been attained and Maryland is now surpassed as a coal producer by a dozen States and possibly one or two more. At a number of mines all of the Big Vein coal has been extracted and coal from the smaller or Tyson seam now constitutes a material part of the shipments.

The tonnage in the years named has been, in net tons:

Year.	Tons.	Year.	Tons.	Year.	Tons.
1911	4,685,795	1915	4,180,477	1919	3,021,686
1912	4,964,038	1916	4,460,046	1920	4,030,239
1913	4,779,839	1917	4,745,924	1921	1,827,740
1914	4,133,547	1918	4,497,297	1922	1,100,000

Distribution of Maryland shipments originating chiefly on the Cumberland & Pennsylvania RR., the chief and once the only outlet from the Georges Creek mines, and the Georges Creek & Cumberland, now part of the Western Maryland, has been as follows:

Year.	B. & O. R. R.	C. & O. Canal.	Penn. R. R.	W. Md.	Total.
1915	1,791,402	174,320	163,157	898,280	3,027,159
1916	1,558,803	158,155	173,332	1,130,397	3,020,687
1917	1,457,186	151,258	173,696	1,485,224	3,267,364
1918	1,572,160	138,122	236,712	1,258,896	3,205,884
1919	878,673	133,571	120,448	902,713	2,035,405
1920	1,444,097	127,905	265,205	1,032,433	2,869,640
1921	822,878	66,540	91,708	386,421	1,367,047
1922	445,096	58	65,671	209,083	719,908

The coal tonnage of Maryland, as reported by the C. & P. RR. Co., excludes output from certain mines sometimes included in the Upper Potomac basin of West Virginia. While these mines are located in Maryland, the coal is transported across the river into West Virginia and there loaded on cars for shipment. In addition there is also to be added to the above figures, in arriving at total output, coal used at mines and locally from small mines and country banks, amounting to over 400,000 tons; also the output of Garrett County mines shipped via the B. & O., which amounts to about 100,000 tons annually.

The first mining company was incorporated in 1836. After the construction of the Baltimore & Ohio RR., in 1842, and the Chesapeake & Ohio Canal, in 1850, the output from the Maryland mines increased rapidly. The attempt to ship coal from the mines to barges, prior to advent of the B. & O. R.R., was not long continued. The method was too destructive to life and was the cause of so much loss in coal that it was soon abandoned, and it was not until 1842 that the industry really began to assume importance.

Kansas.

The earliest record of coal production of Kansas dates from 1869, but as the amount then reported was 36,891 tons it is probable that mining was carried on several years before that time.

The coal fields, three in number, are all in the eastern part of the State within easy access of the important consuming territory in and about Kansas City.

The output first exceeded one million tons in the year 1884 and grew rapidly in the next five years, reaching three million tons in 1892 and passing the four million ton mark in 1900. Since then the growth has been at a fluctuating rate, exceeding seven million tons on several occasions.

The tonnage in the years named has been as below:

Year.	Tons.	Year.	Tons.	Year.	Tons.
1914	6,860,988	1917	7,184,975	1920	5,838,408
1915	6,824,474	1918	7,561,947	1921	3,466,641
1916	6,881,455	1919	5,224,724	1922	3,100,000

Alabama.

Alabama has a singular record of long-continued production on a modest basis, succeeded by a period of sudden and rapid growth. The coal fields are in the northern central portion of the State, where the population was very small in the early days. There was an output of 946 tons in 1840, but not until 1860 did the output exceed 10,000 tons, and a period of 16 years elapsed before the 100,000 ton mark was passed.

It was not until the early '80s that the coal industry of Alabama as we know it today became a feature. At that time the exploitation of the iron ores of the Birmingham district was commenced, and in the past 30 years, as is well known, a great industrial center has been developed in that territory. Beginning with an output of 2,492,000 tons in 1885, the figures mounted rapidly or with some set-backs through the three, four, five, six, seven, eight, nine and ten million ton marks, when it reached 10,354,570 tons in 1902. As our records show it has doubled in the intervening time, although, as is customary in the case of districts depending on the iron and steel business, there are marked ups and downs in the record.

Tonnage in years named has been as follows:

Year.	Tons.	Year.	Tons.	Year.	Tons.
1911	15,011,853	1915	14,027,937	1919	15,536,721
1912	16,513,040	1916	18,234,625	1920	16,140,099
1913	17,907,284	1917	20,068,074	1921	12,568,899
1914	15,520,943	1918	19,184,962	1922	16,100,000

Kentucky.

Kentucky is an interesting State from a coal trade standpoint. Its coal fields belong in two separate and distinct basins, the western field being the interior coal basin while the eastern field is in a portion of the Appalachians. Early developments were in the western part of the State, an output of 328 tons being recorded in 1828. As early as 1845 the output had reached 100,000 tons, reached 200,000 in 1855, but not until 1873 was the 400,000-ton mark reached, the fluctuations being quite marked in the intervening time.

The output got up to 1,000,000 tons in 1879 and continued quite steadily on the basis of 2,000,000 or 3,000,000 tons per annum until the opening of the large mines in the eastern part of the State in the late '90s. As the new century came in the Kentucky production had reached 5,469,000, and thereafter increased nearly 1,000,000 tons per year until the recent past when even more rapid progress has been made. The coal of the eastern part of the State is particularly high in quality and finds a wide market throughout the West and Northwest.

The tonnage in recent years has been as follows:

Year.	Tons.	Year.	Tons.	Year.	Tons.
1911	13,924,811	1915	21,361,674	1919	30,036,061
1912	16,323,904	1916	25,393,997	1920	35,528,762
1913	19,421,288	1917	27,807,971	1921	31,588,270
1914	20,168,150	1918	31,612,617	1922	40,100,000

Arkansas.

The coal fields of Arkansas are in the central western part of the State, extending eastward from the old town of Fort Smith. Arkansas has long been known as a producer of coal, some output having been mentioned as far back as 1840, and specified in the official returns again in 1860. But not until 1880 was there a continuous record of coal output available, for Arkansas in the '60s and '70s, to go no further back, was a wild place and little thought was given to statistics.

Commencing with an output of 25,000 to 50,000 tons per annum in the early '80s, the production amounted to half a million tons with the commencement of the next decade, and with the development of the Southwestern railroads it advanced to a matter of 1,205,000 tons in 1898, and passed the two million mark in 1903.

Since then there has been little or no growth, as the development of oil in the Southwest has militated against increased steam trade, and the fact that Arkansas is largely a wooded country, with a comparatively mild climate, restricts the production of coal for domestic purposes, particularly as coal of better quality can be had from Oklahoma.

The tonnage in recent calendar years has been as below:

Year.	Tons.	Year.	Tons.	Year.	Tons.
1911	2,106,789	1915	1,652,106	1919	1,429,020
1912	2,100,819	1916	1,994,915	1920	2,050,596
1913	2,234,107	1917	2,143,579	1921	1,227,777
1914	1,836,540	1918	2,227,369	1922	950,000

Iowa.

The coal fields of Iowa are particularly restricted to supplying the home market. More so than in any other State is the coal utilized for local purposes. The principal producing fields center about Des Moines and extend north and south in the central portion of the State, so that there is not so much opportunity to make shipments beyond the limits of the state of origin as the coal cannot compete in distant markets when necessary freight charges have been paid. Being readily accessible for home use, many mines selling their product by wagon delivery in neighboring cities and towns, the coal industry of Iowa became established at a very early date, a small output being recorded as far back as 1840, and at the close of the Civil War the output had grown to 69,574 tons, which was much more than Virginia produced in that year. In 1878 the output had grown to 1,250,000 tons, and for many years subsequent to 1883 the output remained steady at between 4,000,000 to 5,000,000 tons.

The tonnage in years named has been as below:

Year.	Tons.	Year.	Tons.	Year.	Tons.
1911	7,331,648	1915	7,614,143	1919	5,624,692
1912	7,289,529	1916	7,260,800	1920	7,774,916
1913	7,525,936	1917	8,965,830	1921	4,531,392
1914	7,451,022	1918	8,192,195	1922	4,600,000

Ohio

With its coal fields located in the eastern part of the State, adjacent to the great and long-established industrial district centering about Pittsburgh, and with many old-established railroad lines traversing the State, Ohio early became an important coal-producing section, having a substantial tonnage record as far back as 1838 and continuing to be a greater coal producer than Illinois up to 1870, when the difference in favor of the more westerly State was but nominal. During the '70s there were various back and forth movements. Labor difficulties and other local causes resulted in fluctuation of output in one State and another, but in 1883 Ohio had to yield the palm to Illinois, and about 15 years later was surpassed by West Virginia also.

Ohio contains the celebrated Hocking field which for many years furnished a high grade domestic coal widely known throughout the West. This has in more recent years been displaced by the smokeless coals of West Virginia and the development of the natural gas fields some 25 or 30 years ago has also been a factor operating against the coal industry of Ohio. The operators of this State have also had to contend with unfair freight rates in years gone by, but nevertheless the tonnage has doubled in the last 20 years, and of the shipments from Lake Erie ports, which constitute so important a factor in the trade, a considerable percentage represents coal from this State.

The tonnage of this State in the years named has been as follows:

Year.	Tons.	Year.	Tons.	Year.	Tons.
1911	30,342,039	1915	22,627,046	1919	35,876,682
1912	34,444,291	1916	34,526,552	1920	45,032,653
1913	36,285,468	1917	41,677,986	1921	31,942,776
1914	18,182,940	1918	47,849,236	1922	26,500,000

New Mexico.

The principal coal fields of New Mexico are in the northwestern part of the State adjacent to the Atchison, Topeka & Santa Fe Ry. The mining industry of that State is directly associated with the growth of railroad requirements, and commencing with a tonnage of 21,000 in 1881 it rapidly advanced to a basis of 500,000 to 600,000 tons per annum, reaching the million mark in 1899 and 2,628,000 in 1907 and continuing well above 3,000,000 tons every year since 1909.

As in other sections of the Southwest the use of coal is much restricted by reason of the large supply of fuel oil that is available.

The tonnage in the years named has been as below:

Year.	Tons.	Year.	Tons.	Year.	Tons.
1911	3,148,158	1915	3,817,940	1919	3,138,756
1912	3,536,824	1916	3,793,011	1920	3,683,440
1913	3,708,806	1917	4,000,527	1921	2,453,482
1914	3,877,689	1918	4,023,239	1922	3,100,000

Tennessee.

Like the neighboring State of Alabama, Tennessee has a long-extended coal trade history. There was an output of 558 tons recorded in 1840 and the production mounted steadily year by year until it reached 100,000 tons in 1855. The business was seriously interfered with by the Civil War and the resulting depression in the affairs of the South, not surpassing 200,000 tons until 1872. The State continued a larger coal producer than Alabama until 1883, and since then Tennessee has decreased considerably in relative importance, although output increased to 2,165,585 tons in 1890 and to 3,022,895 tons in 1898. In recent years the figures have not varied greatly from the 6,000,000-ton mark, although 1910 was a particularly good year.

The Tennessee mines are in narrow belt territory, extending north from the neighborhood of Chattanooga, the celebrated Jellico field being in the northern part thereof. This tonnage is largely used throughout the South for domestic purposes, even in proximity to the coal mines of Alabama, and finds some outlet in the neighboring State of Kentucky, also.

The tonnage has been as follows in past several years:

Year.	Tons.	Year.	Tons.	Year.	Tons.
1911	6,433,156	1915	5,730,361	1919	5,213,205
1912	6,473,228	1916	6,137,449	1920	6,585,228
1913	6,860,184	1917	6,194,221	1921	4,460,226
1914	5,943,258	1918	6,831,048	1922	4,600,000

Wyoming.

Wyoming contains one of the greatest coal reserves to be found in the United States. The deposits are divided into two large areas and several small ones embracing, in the aggregate, nearly half the area of the State.

The development commenced at the time the Union Pacific Railroad was constructed and the principal mines are in the southern part of the State adjacent to the line of the road. More recently mines tributary to the Burlington system have been opened in the northeastern part of the State.

In 1870 the tonnage was estimated at 50,000 tons, and in 1880 it had grown to 589,595 tons. It passed the million mark in 1887, the two million mark four years later, the three million mark in 1889 and the four million mark in the next year. The five million mark was soon passed, as was the sixth. An output of 7,533,088 was attained in 1910, and since then a steady rate of growth has been maintained, with but minor fluctuations year by year. Much of the coal is of high quality and is widely used for domestic purposes.

The following tabulation shows the output of Wyoming in recent years, the figures in each case being for the fiscal year ending September 30:

Year.	Tons.	Year.	Tons.	Year.	Tons.
1911	6,610,378	1915	6,268,989	1919	7,219,738
1912	7,340,139	1916	7,696,344	1920	9,623,271
1913	7,050,541	1917	8,575,619	1921	7,200,666
1914	7,186,587	1918	9,438,688	1922	9,796,000

Missouri.

The principal coal field of Missouri is situated in the northern central portion of the State, centering about Columbia and Huntsville. The State is one of the oldest of coal producers, records extending back to 1840, when there was an output of 9,972 tons reported. Even as far back as 1850 there was an estimated output of 100,000 tons.

The first railroad in the Far West, as it was then called, the Hannibal & St. Joseph, crossed the Missouri coal fields and furnished, at once, a market and an outlet for them. Tonnage increased to 500,000 tons in 1867 and 1,000,000 in 1876. The two million ton mark was passed in 1882 and the three million mark only three years later.

From then on there was a fluctuating tendency and the four million mark was not attained until 1903. Only recently has the output surpassed five million tons.

The coal of Missouri is not of particularly high quality and is not dealt in to any material extent in markets outside of the State. Even local markets are not secure in view of the competition that is encountered when trade is dull and producers in other fields have to seek an outlet.

Coal tonnage produced in Missouri during a series of years has been:

Year.	Tons.	Year.	Tons.	Year.	Tons.
1914	3,935,980	1917	5,670,549	1920	5,266,565
1915	3,811,593	1918	1,464,818	1921	3,551,621
1916	4,742,146	1919	3,979,798	1922	2,700,000

Texas.

Texas is one of the few States in which the production of lignite constitutes an important feature. Lignite is a low grade of bituminous. It constitutes something more than two-thirds of the tonnage of bituminous produced in that State, and while representing a fuel in which the process of carbonization has made less progress than in the case of fuels of higher grade, it serves a useful purpose in that State of magnificent distances, and generally mild climate where a high grade domestic fuel is not especially required.

The coal industry in Texas is of modern development, the first official returns dating from 1884, when a tonnage of 125,000 was reported. There was not as much as a million tons produced in any year up to 1901, and the output has never exceeded 2,500,000 tons, as indicated by the figures below. The bituminous mines are chiefly in the northern central part of the State while the lignite mines are in the eastern part of the State.

The tonnage in the years named has been as below:

Year.	Tons.	Year.	Tons.	Year.	Tons.
1914	2,323,773	1917	2,355,815	1920	1,615,015
1915	2,088,908	1918	2,261,135	1921	972,839
1916	1,987,503	1919	1,680,656	1922	1,000,000

Michigan.

The Michigan coal basin occupies, theoretically, a very large area in the central part of the State, but mining operations are confined to four small districts, of which that centering about Saginaw is the most important.

Coal was mined in Michigan on a small scale as far back as the Civil War and in the early '80s the tonnage exceeded 100,000 tons annually. From that time it decreased to 70,000 tons in 1894, but with the development and equipment of certain mines on a modern basis, prompted by the needs of the old Flint & Pere Marquette R. R. Co., considerable progress was made during the next few years and the tonnage reached 1,241,000 tons in 1901. It increased to 2,035,858 tons in 1907, which is the largest amount ever produced in one year in Michigan.

The coal of the State is not of a particularly high quality and has to meet on a competitive basis with tonnage from other States, in some districts of which there is the further advantage of better mining conditions.

Coal tonnage produced in Michigan during a series of years has been:

Year.	Tons.	Year.	Tons.	Year.	Tons.
1911	1,476,074	1915	1,156,138	1919	996,545
1912	1,206,230	1916	1,180,360	1920	1,487,765
1913	1,231,786	1917	1,374,805	1921	1,141,715
1914	1,283,030	1918	1,464,818	1922	940,000

Montana.

Like the adjacent State of Wyoming, Montana has a great amount of coal within its borders, divided between numerous deposits in districts of various sizes. The most important is in the southeastern part of the State adjacent to the Sheridan field of Wyoming.

While there were small outputs reported in the '80s, the coal business of the State did not really assume importance until 1890 when the opening of new railroad lines caused the tonnage to reach 517,477 tons. The million ton mark was reached five years later. The output reached 2,016,857 tons in 1907 and since then has fluctuated year by year with an upward tendency as indicated below.

The tonnage in the years named has been as below:

Year.	Tons.	Year.	Tons.	Year.	Tons.
1911	2,976,358	1915	2,789,755	1919	3,236,369
1912	3,048,495	1916	3,632,527	1920	4,403,866
1913	3,240,973	1917	4,226,689	1921	2,733,958
1914	2,805,173	1918	4,532,505	1922	2,400,000

Since the electrifying of coal mines has become more general, the price of mules has steadily advanced in price until the peak of $400 is asked for a first class "Maude." Breeders are now paying less attention to the raising of mules since the mines are discarding them for inside work.

Oklahoma.

The coal fields of Oklahoma are in the eastern part of the State, running down through the more southerly portion, south of the Canadian River. Coal mining in this State was carried on in but a limited way, while it was reserved as the Indian Territory, and while tonnage was mined for local use many years ago, it was not until 1880 that a definite record was obtainable as to the amount, the output for that year being recorded as 120,947 tons.

It grew quite steadily year by year without any material variation from that time on, passing the million mark in the first year of Statehood, and, aside from labor difficulties in 1894, showing a continuous though less rapid growth from that time on, surpassing two million tons for the first time in 1901, leaping forward to 3,500,000 tons in 1903, but afterwards slipping back and not materially surpassing that figure until ten years later.

Since then the coal mining industry in Oklahoma has been practically stationary, the availability of fuel oil of course greatly restricting coal trade activities throughout the Southwest. The mines of Oklahoma, unfortunately, generate large quantities of gas, and the dust is highly explosive.

On the whole, the coal fields of that State, Arkansas and Texas are among the least attractive from an operating standpoint, and will doubtless be at a disadvantage as long as the oil wells of the Southwest continue as heavy producers:

The tonnage of coal mined in Oklahoma in recent years has been as follows:

Year.	Tons.	Year.	Tons.	Year.	Tons.
1914	3,988,613	1917	4,386,844	1920	4,830,288
1915	3,693,580	1918	4,813,447	1921	3,362,623
1916	3,608,011	1919	3,802,113	1922	2,800,000

California.

California has practically ceased to be a factor in the commercial production of coal, for, while mining has been carried on since 1861 when a tonnage of 6,620 tons was reported, and the output was frequently above 100,000 tons during the '60s and '70s (in fact nearly a quarter of a million tons in 1880), it has declined to almost nothing in recent years, the downward tendency having been only temporarily checked when one concern or another undertook to develop the mineral deposits of the State.

While the coal resources are rather extensive, the coal is lignitic in character and cannot be sold to advantage in competition with fuel from British Columbia and from other States of the Union or from the oil so largely used on the coast. The deposits are located not far from San Francisco.

By way of historical resume we might note: The Blossburg district was opened in 1840, Georges Creek in 1842, Broad Top in 1856, Clearfield 1866, Meyersdale 1872, Chesapeake & Ohio 1878, Elk Garden 1881, Norfolk & Western 1883, and the Beech Creek in 1884.

Virginia.

Virginia has an interesting history as a coal-producing field, the Richmond basin having been the earliest source of coal supply on the seaboard. As early as 1822 the State turned out 54,000 tons and then exceeded in importance the coal industry of Pennsylvania. In 1828 the tonnage stood at 100,000. In 1838 it was 300,000, the high-water mark being achieved in 1840, when the figure of 424,894 was recorded. Later the adjacent Farmville coal areas were exploited, coal therefrom being hauled by rail to a point on the James River.

With this tonnage taking the place of the decreasing supplies of the Richmond basin an output of 473,350 tons was achieved in 1860. From 1862 forward for 20 years the coal business in this State was on a very modest basis, but at that time the celebrated Pocahontas fields in the western part of the State were opened and the output mounted rapidly to 1,073,000 tons in 1888. There was a period of recession subsequently, but by 1894 the tonnage reached new high levels and attained the figure of 2,105,791 tons in 1899.

While only a small portion of the Pocahontas field is in Virginia, the development of the Clinch Valley district and other fields in the southwestern part of Virginia has served to greatly augment the tonnage from the State.

The tonnage of this State has been as below in years named:

Year.	Tons.	Year.	Tons.	Year.	Tons.
1911	6,864,667	1915	8,122,596	1919	9,326,830
1912	7,846,638	1916	9,707,474	1920	11,244,106
1913	8,828,068	1917	10,087,091	1921	7,492,378
1914	7,959,535	1918	10,289,808	1922	11,120,000

Utah.

The coal fields of Utah are large and, while scattered, are for most part within easy access of Salt Lake City and larger towns in the northern part of the State. With the development of transportation facilities in the Rocky Mountain section and the general building up of that part of the country Utah has developed as a coal producer. The coal trade of the State is of comparatively modern origin, amounting to no more than 50,000 tons in 1876 and standing at 200,000 tons in 1886. It doubled in the next ten years, and since 1900 has increased very substantially from the 1,147,000 tons then recorded, as shown by the details that we give below.

The tonnage in the years named has been:

Year.	Tons.	Year.	Tons.	Year.	Tons.
1914	3,103,036	1917	4,125,230	1920	6,005,199
1915	3,108,715	1918	5,136,825	1921	4,078,784
1916	3,567,428	1919	4,631,323	1922	4,864,000

Shipments of bituminous coal over the Erie RR. during 1922 amounted to 7,797,689 gross tons, compared with 6,959,744 tons in 1921.

Indiana.

The coal fields of Indiana have their upper limit in the western central part of the State, adjacent to the Danville district of Illinois, and extend in a broadening field down to the Ohio River, embracing all the southwestern counties of the State.

While the Indiana block coal field early established a good reputation on a certain limited tonnage it was not until recent times that the coal fields of Indiana had aught but a strictly local market.

An output of 9,632 tons was recorded in 1840, but not until 1860 did the tonnage reach 100,000 tons, and although it touched 1,000,000 tons in 1873 reactions followed, so that it did not reach the 2,000,000 ton mark until 1882. The output continued on a basis of about 3,000,000 tons a year for about 10 years, finally reaching the 4,000,000 ton mark in 1897, which may be considered approximately the commencement of modern development in Indiana, the next 10 years showing a growth of 13,985,713 tons.

The tonnage in the years named has been as below:

Year.	Tons.	Year.	Tons.	Year.	Tons.
1911	14,201,355	1915	17,006,152	1919	20,912,288
1912	15,285,718	1916	20,093,528	1920	29,000,585
1913	17,165,671	1917	26,077,182	1921	20,319,509
1914	16,641,132	1918	30,678,634	1922	17,330,000

Washington.

Washington has important coal fields which are conveniently located adjacent to the cities in the western part of the State and the tidewater facilities afforded by Puget Sound. Of the States on the Pacific Coast no other one compares with Washington as a coal-producer, and while it has had to compete with the great coal fields of British Columbia there has been a steady output maintained even if no material growth is to be recorded.

The industry dates back to 1860 when there was an output of 5,374 tons. Not until 1876 did the output exceed 100,000 tons, but in 1884 it had reached 1,215,750 and passed the 2,000,000 mark in 1899. Since then the output has generally been in excess of 3,000,000 tons, but it has never exceeded 4,056,000.

The tonnage of the State of Washington has been as follows:

Year.	Tons.	Year.	Tons.	Year.	Tons.
1911	3,548,322	1915	2,409,331	1919	2,990,447
1912	3,346,946	1916	3,019,600	1920	3,753,093
1913	3,831,647	1917	4,002,759	1921	2,428,722
1914	3,040,361	1918	4,082,212	1922	2,400,000

On the Erie Railroad in 1922 there was consumed 3,274,547 tons of coal, of which 3,115,606 tons was bituminous. The total cost was $15,354,832.

United States Bituminous Production, Yearly Since Outset.

807-1820	3,000	1846 ...	1,977,707	1872 ...	27,220,233	1897 ...	147,617,519
821 ...	.....	1847 ...	1,735,062	1873 ...	31,449,643	1898 ...	166,593,623
822 ...	54,000	1848 ...	1,968,032	1874 ...	27,787,130	1899 ...	193,323,187
823 ...	60,000	1849 ...	2,453,497	1875 ...	29,862,554	1900 ...	212,316,112
1824 ...	67,040	1850 ...	2,880,017	1876 ...	30,486,755	1901 ...	225,828,149
1825 ...	75,000	1851 ...	3,253,460	1877 ...	34,841,444	1902 ...	260,216,844
1826 ...	88,720	1852 ...	3,664,707	1878 ...	36,245,918	1903 ...	282,749,348
1827 ...	94,000	1853 ...	4,169,862	1879 ...	37,898,006	1904 ...	278,659,689
1828 ...	100,408	1854 ...	4,582,227	1880 ...	42,831,758	1905 ...	315,062,785
1829 ...	102,000	1855 ...	4,784,919	1881 ...	53,961,012	1906 ...	342,874,867
1830 ...	104,800	1856 ...	5,012,146	1882 ...	68,429,933	1907 ...	394,759,112
1831 ...	120,100	1857 ...	5,153,622	1883 ...	77,250,680	1908 ...	332,573,944
1832 ...	146,500	1858 ...	5,548,376	1884 ...	82,998,704	1909 ...	379,744,257
1833 ...	133,750	1859 ...	6,013,404	1885 ...	72,824,321	1910 ...	417,111,142
1834 ...	136,500	1860 ...	6,494,200	1886 ...	74,644,981	1911 ...	405,907,059
1835 ...	134,000	1861 ...	6,688,358	1887 ...	88,562,314	1912 ...	450,104,982
1836 ...	142,000	1862 ...	7,790,725	1888 ...	102,040,093	1913 ...	478,435,297
1837 ...	182,500	1863 ...	9,533,742	1889 ...	95,682,543	1914 ...	422,703,970
1838 ...	445,452	1864 ...	11,066,474	1890 ...	111,302,322	1915 ...	442,624,426
1839 ...	552,038	1865 ...	11,900,427	1891 ...	117,901,238	1916 ...	502,519,682
1840 ...	1,102,931	1866 ...	13,352,400	1892 ...	126,856,567	1917 ...	551,790,563
1841 ...	1,108,700	1867 ...	14,722,313	1893 ...	128,385,231	1918 ...	579,385,820
1842 ...	1,244,494	1868 ...	15,858,555	1894 ...	118,820,405	1919 ...	458,063,000
1843 ...	1,504,121	1869 ...	15,821,226	1895 ...	135,118,193	1920 ...	556,563,000
1844 ...	1,672,045	1870 ...	17,371,305	1896 ...	137,640,276	1921 ...	406,990,000
1845 ...	1,829,872	1871 ...	27,543,023			1922 ...	407,894,000

Chesapeake & Ohio Ry. Shipments.

Shipments of bituminous coal over the Chesapeake and Ohio Ry. for revenue and company use, during 1921 and 1922, were:

	Revenue		Company		Total	
Month	1921	1922	1921	1922	1921	1922
January	1,995,867	1,837,871	321,675	202,055	2,277,542	2,039,926
February	1,227,682	2,672,591	143,011	202,981	1,370,693	2,875,572
March	1,518,164	2,703,143	273,647	290,871	1,791,811	2,994,014
April	1,778,745	2,314,961	260,663	188,554	2,039,408	2,503,515
May	2,445,712	2,729,824	183,598	161,822	2,629,310	2,891,646
June	2,617,645	3,118,330	188,357	235,905	2,806,002	3,354,235
July	2,634,534	2,261,920	152,999	151,004	2,417,533	2,412,924
August	2,043,132	1,939,273	163,220	89,671	2,206,352	2,028,944
September	2,061,366	1,867,251	142,569	99,855	2,203,935	1,967,106
October	2,362,583	1,999,342	159,291	136,706	2,521,874	2,136,048
November	1,929,444	2,307,618	191,472	159,755	2,120,916	2,467,373
December	1,519,273	2,362,408	177,166	160,779	1,696,439	2,523,187
Total	23,724,147	28,114,532	2,357,668	2,074,958	26,081,815	30,194,490

AVERAGE PRICE FOR COAL AT THE MINES

General Details and Figures by States Show Price of Tonnage for a Term of Years.

Anthracite and bituminous prices, at mines, for ten years have been as follows, according to figures furnished to the United States Geological Survey:

Bituminous ...	$1.15	$1.18	$1.17	$1.13	$1.32	$2.26	$2.58	$2.49	$3.73	$2.89
Anthracite	2.11	2.13	2.07	2.07	2.30	2.85	3.40	4.14	4.84	5.00

These figures are based upon the total tonnage shipped of all grades, sizes and qualities, with the due proportion of each. And anthracite figures are reduced to net tons, as are also bituminous figures in cases where that coal is sold in gross tons.

Details by States appear below:

State	1913	1914	1915	1916	1917	1918	1919	1920	1921
Alabama	$1.31	$1.34	$1.28	$1.37	$2.27	$2.85	$2.96	$3.63	$3.08
Arkansas	1.76	1.72	1.79	1.92	2.56	3.67	3.70	4.55	4.37
California	3.54	2.85	2.54	2.12	2.30	2.70	3.38	4.23	4.66
Colorado	1.52	1.66	1.58	1.62	2.22	2.69	2.78	3.49	3.55
Georgia	1.41	1.44	1.72	1.79	2.53	3.59	3.71	5.00	2.14
Idaho	2.43	*	*	*	*	*	*	*	*
Illinois	1.14	1.12	1.10	1.25	1.88	2.32	2.30	3.08	2.74
Indiana	1.11	1.10	1.10	1.27	1.99	2.29	2.22	3.16	2.57
Iowa	1.79	1.79	1.78	1.86	2.35	3.02	3.09	3.94	3.81
Kansas	1.67	1.64	1.66	1.78	2.31	2.91	3.05	3.85	3.85
Kentucky	1.05	1.02	1.01	1.19	2.17	2.55	2.46	4.10	2.69
Maryland	1.24	1.27	1.28	1.56	2.46	2.77	2.73	4.62	3.61
Michigan	1.99	1.99	2.05	2.25	3.22	3.83	3.88	4.93	4.87
Missouri	1.73	1.73	1.73	1.91	2.43	3.02	3.21	4.13	3.92
Montana	1.74	1.75	1.62	1.73	2.11	2.53	2.67	3.15	3.26
New Mexico	1.46	1.61	1.44	1.47	1.86	2.68	3.11	3.68	3.91
North Dakota	1.52	1.52	1.45	1.49	1.80	2.45	2.50	2.88	2.69
Ohio	1.10	1.13	1.08	1.33	2.48	2.58	2.22	3.80	2.65
Oklahoma	2.05	2.06	2.01	2.09	2.81	3.64	3.83	4.80	4.62
Oregon	2.53	2.78	2.84	2.68	3.38	2.81	3.40	4.47	*
Penn., bituminous...	1.11	1.07	1.06	1.30	2.44	2.59	2.42	3.73	2.78
South Dakota	1.96	1.73	1.55	2.03	2.90	2.80	3.17	3.60	2.81
Tennessee	1.14	1.14	1.13	1.23	2.19	2.83	2.77	4.00	3.35
Texas	1.77	1.69	1.65	1.56	1.77	2.63	2.69	3.75	2.64
Utah	1.65	1.59	1.58	1.62	2.07	2.71	2.76	3.22	3.35
Virginia	1.01	1.01	.98	1.06	2.00	2.51	2.55	3.96	3.06
Washington	2.38	2.20	2.17	2.27	2.68	3.46	3.58	3.88	4.03
West Virginia	1.01	.99	.97	1.18	2.32	2.56	2.49	4.32	2.84
Wyoming	1.56	1.55	1.46	1.55	1.93	2.39	2.60	2.98	3.24
Total bituminous.	1.18	1.17	1.13	1.32	2.26	2.58	2.49	3.73	2.89
Penn., anthracite....	2.13	2.07	2.07	2.30	2.85	3.40	4.14	4.84	5.00
General average..	1.33	1.33	1.29	1.47	2.35	2.70	2.75	3.89	3.26

* Included in California

These figures have the accuracy guaranteed by Government investigation, and yet it must be recognized that averaging up the entire output in such a way embraces so many dissimilar factors that an application of the average must be made only with caution. For instance, the anthracite figures include the price realized on all sizes of coal, even down to culm, sold, perhaps, at a merely nominal price. And the bituminous figures not only include the high prices realized at certain remote places where cost of mining is high, but also include the tonnage supplied on large contracts by concerns having a more or less definite interest in the affairs of their customers.

Labor Employed in Coal Mining.

The following table shows the number of men employed in coal mining in the various states in 1920 and 1921 underground, on the surface, and the number of days worked:

	1920				1921			
State	Underground.	Surface.	Total.	Days Wkd.	Underground.	Surface.	Total	Days Wkd.
Alabama	20,355	5,185	25,540	247	21,173	4,636	25,809	166
Arkansas	3,354	612	3,966	176	3,163	453	3,616	112
Colorado	11,005	2,706	13,711	255	11,906	2,623	14,529	164
Georgia	97	51	148	294	85	51	136	183
Illinois	76,993	10,091	87,084	213	85,509	9,922	95,431	152
Indiana	26,922	4,233	31,155	192	28,932	3,755	32,687	128
Iowa	10,757	1,148	11,905	250	10,412	974	11,386	148
Kansas	7,589	1,395	8,984	204	6,991	1,216	8,207	137
Kentucky	40,036	9,416	49,452	182	41,733	8,788	50,521	152
Maryland	4,630	918	5,548	207	3,942	726	4,668	120
Michigan	1,927	227	2,154	261	1,968	244	2,212	196
Missouri	6,865	1,973	8,838	233	6,971	1,584	8,555	166
Montana	3,424	780	4,204	250	3,460	718	4,178	143
New Mexico	2,940	798	3,738	302	3,855	722	4,577	150
North Carolina	40	10	50	288	45	15	60	300
North Dakota	753	357	1,110	218	775	289	1,064	194
Ohio	42,062	8,795	50,857	188	44,698	7,087	51,785	134
Oklahoma	6,878	1,366	8,244	217	7,425	1,429	8,854	141
Pennsylvania (bit)	143,876	30,094	173,970	244	164,222	26,421	190,643	151
South Dakota	37	10	47	133	43	.....	43	129
Tennessee	9,227	2,126	11,353	234	8,561	1,786	10,347	154
Texas	2,573	377	2,950	242	2,598	294	2,892	139
Utah	3,559	945	4,504	252	3,491	931	4,422	151
Virginia	10,553	3,457	14,010	262	9,807	2,115	11,922	166
Washington	3,966	1,028	4,994	260	3,486	848	4,334	159
West Virginia	82,893	20,057	102,950	198	84,752	17,098	101,850	149
Wyoming	6,332	1,447	7,779	264	7,020	1,464	8,484	167
Total bituminous	529,812	109,735	639,547	220	567,289	96,465	663,754	149
Pennsylvania anthracite	101,040	44,015	145,055	271	116,817	42,682	159,499	271
Grand totals	630,852	153,750	784,602	230	684,106	139,147	823,253	173

NUMBER AND SIZE OF MINES

Soft Coal Mines of United States Classified by Tonnage Output in 1920.

The United States Geological Survey has issued a statement showing the number of soft coal mines in each state in 1920, classified by size into five general divisions.

Of the 14,766 bituminous mines in the country no less than 8,595 are of the smallest class of producers, those turning out less than 10,000 tons a year. Although these small operations constitute 58 per cent of the total number, they produced less than three per cent of the total tonnage. Most of them were no doubt wagon mines, for 10,000 tons is equivalent to about 200 cars, and this means less than a car a day for each working day of the year.

These small mines flourish particularly in Pennsylvania, where there were 3,631 in 1920, and in Ohio, where the number was 1,364. West Virginia comes third with 875, and Kentucky fourth with 634.

Going to the other extreme, it is found that the largest class of mines, those producing over 200,000 tons a year, although numbering only 701 and forming less than five per cent of the total number of operations, turned out over 41 per cent of the country's bituminous coal in the year 1920.

Next to Pennsylvania, Illinois has the greatest number of large mines. In the latter state there were 166 mines producing upwards of 200,000 tons each, whereas West Virginia had only 74, although West Virginia was slightly ahead of Illinois as regards total production.

Two states, Georgia and North Carolina have only one mine each, and there are but three mines in Oregon.

Details are shown below:

State	Class 1 Producing Over 200,000 Tons			Class 2 Producing 100,000-200,000 Tons			Class 3 Producing 50,000-100,000 Tons		
	Number	Per Cent of Total Mines	Per Cent of State Output	Number	Per Cent of Total Mines	Per Cent of State Output	Number	Per Cent of Total Mines	Per Cent of State Output
Alabama	15	4.6	31.1	30	9.2	27.4	47	14.3	19.3
Arkansas	...	...	...	4	3.3	25.6	5	4.1	16.3
Colorado	15	7.4	35.7	31	15.4	33.6	28	13.9	16.7
Georgia	...	...	...	....	...	...	1	100.0	100.0
Illinois	166	25.4	77.8	87	13.4	13.9	53	8.1	4.7
Indiana	36	6.9	40.7	81	15.6	38.6	57	10.9	14.6
Iowa	4	1.8	15.9	23	10.5	41.2	25	11.4	22.2
Kansas	1	0.4	3.6	13	5.0	28.5	31	11.9	35.8
Kentucky	21	1.8	17.0	83	6.9	32.2	115	9.6	22.0
Maryland	...	...	...	9	4.7	29.0	27	14.1	43.1
Michigan	2	11.1	32.1	3	16.7	28.5	6	33.3	34.0
Missouri	2	0.6	7.6	10	2.9	23.9	21	6.1	25.8
Montana	7	6.6	65.9	5	4.7	13.3	6	5.7	10.5
New Mexico	3	7.0	30.0	16	37.2	52.5	5	11.6	11.1
North Dakota	1	0.6	25.8	....	...	...	2	1.2	12.9

Ohio	44	2.3	26.2	108	5.5	33.0	118	6.0	18.2
Oklahoma	...	...	...	8	4.9	17.9	40	24.9	43.3
Pennsylania	249	4.7	47.5	244	4.6	20.5	342	6.4	14.3
Tennessee	7	2.8	26.9	11	4.4	20.1	19	7.7	19.6
Texas	...	...	...	3	6.8	22.3	7	15.9	26.4
Utah	15	32.6	84.6	5	10.9	12.3	1	2.2	1.4
Virginia	14	6.1	54.1	16	6.9	18.9	21	9.1	13.3
Washington	5	10.2	39.8	8	16.3	35.0	6	12.2	10.8
West Virginia	74	3.5	23.3	213	10.1	31.7	289	13.8	23.6
Wyoming	20	24.1	62.4	20	24.1	29.6	7	8.3	5.3
GRAND TOTAL	701	4.8	41.8	1,031	7.0	25.1	1,279	8.8	16.0

State	Class 4 Producing 10,000-50,000 Tons			Class 5 Producing Less Than 10,000 Tons			Total, All Classes	
	Number	Per Cent of Total Mines	Per Cent of State Output	Number	Per Cent of Total Mines	Per Cent of State Output	Number of Mines	State Output
Alabama	120	36.7	19.9	115	35.2	2.3	327	16,294,099
Arkansas	40	32.8	47.8	73	59.8	10.3	122	2,103,596
Cal., Id. and Ala.	2	15.4	72.8	11	84.6	27.2	13	63,864
Colorado	52	25.7	12.5	76	37.6	1.5	202	12,278,225
Georgia	....	....	....	....	....	....	1	50,156
Illinois	90	13.7	3.0	258	39.4	0.6	654	88,724,893
Indiana	54	10.3	4.3	294	56.3	1.8	522	29,350,585
Iowa	56	25.6	17.2	111	50.7	3.5	219	7,813,916
Kansas	52	19.9	26.0	164	62.8	6.1	261	5,926,408
Kentucky	347	28.9	25.6	634	52.8	3.2	1,200	35,690,762
Maryland	36	18.7	23.6	120	62.5	4.3	192	4,065,239
Michigan	3	16.7	5.3	4	22.2	0.1	18	1,489,765
Missouri	69	20.1	33.7	242	70.3	9.0	344	5,369,565
Montana	13	12.3	7.7	75	70.7	2.6	106	4,413,866
New Mexico	9	20.9	5.6	10	23.3	0.8	43	3,683,440
North Carolina	1	100.0	100.0	....	...	...	1	11,540
North Dakota	15	9.6	34.6	138	88.6	26.7	156	948,625
Ohio	320	16.4	17.6	1,364	69.8	5.0	1,954	45,878,191
Oklahoma	56	34.8	35.2	57	35.4	3.6	161	4,849,288
Oregon	1	33.3	88.3	2	66.7	11.7	3	20,717
Pennsylvania	982	18.4	14.4	3,631	66.7	3.6	5,448	170,607,847
South Dakota	....	...	...	17	100.0	100.0	17	12,777
Tennessee	76	30.8	28.1	134	54.3	5.3	247	6,662,428
Texas	31	70.5	50.9	3	6.8	0.4	44	1,615,015
Utah	3	6.5	1.3	22	47.8	0.4	46	6,005,199
Virginia	50	21.6	10.9	130	56.3	2.8	231	11,378,606
Washington	20	40.9	13.1	10	20.4	1.3	49	3,757,093
West Virginia	651	31.0	19.7	875	41.6	1.7	2,102	89,970,707
Wyoming	11	13.4	2.4	25	30.1	0.3	83	9,630,271
GRAND TOTAL	3,160	21.5	14.4	8,595	58.2	2.8	14,766	568,666,683

Production of Central Competitive Field and Its Relation to Total Bituminous Production of the Country.

We give below figures showing importance of the Central Competitive Coal Field by tonnage and percentages of the aggregate soft coal output of the United States. It will no doubt be interesting to note how well this field has maintained its position as a producer of almost one-third of the coal output of the country throughout a quarter century.

Year	Illinois	Indiana	Ohio	Western* Pennsylvania	Total Central Competitive	Per Cent of Total for U. S.	Per Cent by Five-Year Periods
1898.....	18,599,000	4,921,000	14,517,000	15,349,000	53,386,000	32.0	
1899.....	24,439,000	6,007,000	16,500,000	17,157,000	64,103,000	32.2	32.5
1900.....	25,768,000	6,484,000	18,988,000	17,421,000	68,661,000	32.3	
1901.....	27,332,000	6,918,000	20,944,000	9,967,000	65,161,000	28.9	
1902.....	32,939,000	9,446,000	23,520,000	24,267,000	90,172,000	34.7	
1903.....	36,957,000	10,795,000	24,838,000	25,593,000	98,183,000	34.7	33.2
1904.....	36,475,000	10,842,000	24,400,000	24,556,000	96,273,000	34.5	
1905.....	38,434,000	11,895,000	25,553,000	28,378,000	104,260,000	33.1	
1906.....	41,480,000	12,093,000	27,732,000	34,098,000	115,403,000	33.7	
1907.....	51,317,000	13,986,000	32,142,000	38,471,000	135,916,000	34.4	
1908.....	47,660,000	12,315,000	26,271,000	30,871,000	117,117,000	35.2	34.1
1909.....	50,905,000	14,834,000	27,940,000	33,960,000	127,639,000	33.6	
1910.....	45,900,000	18,390,000	34,210,000	40,988,000	139,488,000	33.4	
1911.....	53,679,000	14,201,000	30,760,000	39,117,000	137,757,000	33.9	
1912.....	59,885,000	15,286,000	34,529,000	41,787,000	151,487,000	33.7	
1913.....	61,619,000	17,166,000	36,201,000	46,267,000	161,253,000	33.7	32.8
1914.....	57,589,000	16,641,000	18,843,000	39,098,000	132,171,000	31.3	
1915.....	58,830,000	17,006,000	22,435,000	40,974,000	139,245,000	31.5	
1916.....	66,195,000	20,094,000	34,728,000	43,188,000	164,205,000	32.7	
1917.....	86,199,000	26,539,000	40,749,000	47,816,000	201,303,000	36.5	
1918.....	89,291,000	30,679,000	45,813,000	50,558,000	216,341,000	37.3	35.7
1919.....	60,863,000	20,912,000	35,877,000	42,350,000	160,002,000	34.3	
1920.....	88,631,000	29,091,000	45,276,000	49,824,000	212,822,000	37.8	

*Western Pennsylvania includes the following counties: Allegheny, Armstrong, Beaver, Butler, Greene, Lawrence, Mercer and Washington. Statistics taken from annual report of the United States Geological Survey.

A review of the weather records kept in St. Paul for 103 years, from 1820 to the present time, shows that the theory of "climate changing" is mythical. The mean annual temperature during that time shows a change of but two-tenths of one degree. The average annual temperature from 1820 to 1870 was 43.8 degrees. And the average from 1871 to 1922 was 44.0 degrees. The monthly averages for the same periods are very close.

Coal tonnage statistics for the Pittsburgh & Lake Erie RR. for 1922 not available at time of going to press. The 1921 figures will be found on page 167 of last year's book.

Tonnage and Value of United States Coal.

The most recent report of the United States Geological Survey gives this statement of the coal production of the United States in 1920 and 1921, by States, with value at the mines.

State	Quantity 1920	Value 1920	Quantity 1921	Value 1921
Alabama	16,140,099	$58,637,000	12,568,899	$38,713,000
Alaska	61,111	356,000	76,817	.....
Arkansas	2,050,596	9,328,000	1,227,777	5,360,000
California and Idaho	2,753	12,000	38,845	181,000
Colorado	12,274,225	42,817,000	9,122,760	32,377,000
Georgia	50,156	251,000	33,815	171,000
Illinois	88,630,893	273,140,000	69,602,763	190,986,000
Indiana	29,090,585	91,784,000	20,319,509	52,269,000
Iowa	7,774,916	30,606,000	4,531,392	17,256,800
Kansas	5,838,408	22,504,000	3,466,641	13,333,300
Kentucky	35,528,762	145,929,000	31,588,270	85,092,600
Maryland	4,030,239	18,607,000	1,827,740	6,602,000
Michigan	1,487,765	7,337,000	1,141,715	5,555,000
Missouri	5,266,565	21,747,000	3,551,621	13,915,500
Montana	4,403,866	13,890,000	2,733,958	8,921,600
New Mexico	3,683,440	13,568,000	2,453,482	9,585,000
North Carolina	11,540	81,000	23,438	.....
North Dakota	907,625	2,618,000	864,903	2,329,500
Ohio	45,276,191	172,236,000	31,942,776	84,686,000
Oklahoma	4,830,288	23,205,000	3,362,623	15,546,000
Oregon	20,717	93,000	.....	.....
Pennsylvania—Anthracite	89,598,249	434,252,000	90,473,451	452,305,000
Pennsylvania—Bituminous	168,083,847	627,420,000	116,013,942	322,538,300
Total Pennsylvania	257,681,096	1,061,672,000	206,487,393	774,843,300
South Dakota	12,777	46,000	7,553	21,200
Tennessee	6,585,628	26,361,000	4,460,326	14,932,000
Texas	1,615,015	6,061,000	972,839	2,563,600
Utah	6,005,199	19,350,000	4,078,784	13,662,000
Virginia	11,244,106	414,579,000	7,492,378	22,947,700
Washington	3,753,093	14,544,000	2,428,722	9,787,000
West Virginia	89,450,707	386,900,000	72,786,996	206,661,500
Wyoming	9,623,271	28,716,000	7,200,666	23,358,500
Totals, net tons and dollars	53,332,632	$2,536,975,000	506,395,401	$1,652,288,600

*Included in California.

On page 242 of our 1922 Annual, we published an interesting article with regard to the accuracy of the groundhog as a weather prophet showing how the weather turned out during a series of years. Sometimes, it will be noticed, the groundhog was a good judge of conditions, sometimes his attitude might be described as neutral, while other times he was altogether wrong. So it will be seen that circumstances are just about the same with him as with human prophets.

Fuel Briquets Produced, United States, in 1907-1922.

A new high record of production of fuel briquets was established in 1922. Reports show that the total output was 619,425 net tons, against 398,949 tons in 1921. In comparison with 1920, the year in which the previous maximum was attained, the increase was slightly over 9 per cent.

Production in all districts in 1922 was larger than in the year before, the principal increase occurring in the Central States. The chief factor in the improvement in that territory was the increased demand for briquets to make up the deficit in domestic anthracite in the region supplied from the Upper Lake Docks.

Year	Quantity (Net Tons)	Value	Year	Quantity (Net Tons)	Value
1907	66,524	$258,426	1916	295,155	1,445,662
1908	90,358	323,057	1917	406,856	2,233,888
1909	139,661	452,697	1918	477,235	3,212,793
1911	218,443	808,721	1919	295,734	2,301,054
1912	220,064	952,261	1920	567,192	4,623,831
1913	181,859	1,007,327	1921	398,949	3,632,301
1914	250,635	1,154,678	1922	619,425	5,444,926
1915	221,537	$1,035,716			

Of the 14 plants that operated six used anthracite culm or screenings, two semi-anthracite, one a mixture of anthracite screenings and bituminous slack, one semi-bituminous slack, one a mixture of bituminous slack and sub-bituminous coal, two carbon residue from the manufacture of oil gas, and one bituminous coal, first subjected, to low temperature carbonization.

New York Central Shipments.

Shipments of bituminous coal originating on the New York Central Lines, Buffalo and East, for revenue and company use, during 1921 and 1922 were:

Month	Revenue		Company		Total	
	1921	1922	1921	1922	1921	1922
January	561,285	406,369	104,202	195,330	665,487	601,698
February	338,855	488,223	84,911	196,503	423,766	684,726
March	395,612	602,769	65,097	240,312	460,709	843,081
April	390,537	149,940	106,696	39,627	497,233	189,567
May	372,096	117,504	200,532	11,016	572,628	128,520
June	382,551	113,016	194,667	12,648	577,218	125,664
July	350,013	84,354	177,174	7,854	527,187	92,208
August	379,848	151,011	222,666	45,543	602,514	196,554
September	363,885	713,898	212,282	171,003	576,167	884,901
October	454,665	812,838	233,223	174,165	687,888	987,003
November	362,916	766,836	196,350	249,186	559,266	1,016,022
December	367,863	705,126	211,191	193,341	579,054	898,467
Total*	4,720,126	5,111,883	2,008,991	1,536,528	6,729,117	6,648,411

The above also includes the coal originating on Cambria & Indiana RR. and the Pittsburgh & Susquehanna RR. and moved out over the New York Central Railroad. All remainder from Beech Creek.

*Included in total tonnage originating in the Tioga District, 1921, 212,567 tons; 1922, 157,131 tons of which 141,627 tons were revenue and 15,504 tons company.

Philadelphia Spot Prices, 1922, F. O. B. Mines, Net Tons.

	Jan.	Feb.	March	April	May	June
Pool 1..	$2.75-$3.25	$2.85-$3.25	$2.85-$3.25	$3.00-$3.25	$3.75-$4.10	.....
9..	2.10- 2.50	2.20- 2.65	2.20- 2.65	2.50- 3.00	3.50- 4.00	$4.00-$4.60
10..	1.90- 2.10	1.95- 2.20	1.95- 2.20	.....	3.40- 3.75	3.75- 4.25
11..	1.60- 1.80	1.65- 1.85	1.65- 1.85	2.00- 2.50	.....	3.50- 4.00
54..	1.45- 1.60	1.40- 1.60	1.40- 1.60	2.00- 2.25	.....	.....
64..	1.45- 1.60	1.40- 1.60	1.40- 1.60	2.00- 2.25	.....	.....

	July	Aug.	Sept.	Oct.	Nov.	Dec.
Pool 1..	.....	$7.50-$9.00	.....	.....	.....	$5.00-$5.35
9..	$4.60-$4.95	7.50- 9.00	$5.50-$5.75	$4.00-$4.75	$4.00-$4.65	4.50- 4.85
10..	4.40- 4.75	7.50- 8.50	5.00- 5.25	3.50- 3.75	3.30- 3.70	3.80- 4.15
11..	4.25- 4.50	7.50- 8.25	4.75- 5.00	3.00- 3.50	2.90- 3.40	3.25- 3.50
54..	4.25- 4.50	7.50- 8.00	4.50- 4.75	3.50- 4.00	3.25- 3.75	3.00- 3.75
64..	4.25- 4.50	7.50- 8.00	4.50- 4.75	3.50- 4.00	3.25- 3.75	3.00- 3.75

Exports from Philadelphia.

The exports of coal and coke and bunker tonnage supplied to vessels during 1921 and 1922 were

Month	Anthracite		Bituminous		Coke		Bunker	
	1921	1922	1921	1922	1921	1922	1921	1922
January	5,853	3,399	80,267	12,876	1,257	258	28,664	18,681
February	12,106	10,120	53,352	23,044	1,613	1,373	23,768	21,365
March	6,276	8,774	66,300	20,022	488	1,143	33,724	29,801
April	7,066	702	50,341	10,602	935	1,683	33,840	24,095
May	9,910	4,393	42,855	5,600	....	1,201	33,857	16,565
June	8,323	....	102,524	5,722	2,001	3,129	30,422	10,155
July	3,312	....	57,315	1,119	534	608	30,202	8,860
August	988	....	84,064	1,080	56	1,060	33,397	6,588
September	2,250	....	11,119	3,550	3,711	....	16,763	9,904
October	....	4,217	33,718	14,037	200	1,031	20,800	9,787
November	5,824	6,652	14,948	16,563	495	1,960	27,085	15,984
December	3,131	4,202	16,939	11,632	1,604	1,032	22,126	11,864
Total	65,139	42,459	613,742	125,847	12,894	14,478	334,648	184,649

Lehigh & Susquehanna R. R. Anthracite Tonnage.

From	1922
Wyoming Region.....	2,969,630
Upper Lehigh Region.....	140,649
Beaver Brook Region.....	442,209
Mauch Chunk Region.....	985,766
Schuylkill Region.....	494,497
Distributed as folows:	
East of Mauch Chunk by rail	4,714,138
East of Mauch Chunk by canal	67,574

From	1922
L. V. R. R. at Penn Haven Junction	290
L. V. R. R. at Packerton...	3,512
Total	5,036,556
On line above Mauch Chunk	93,563
To connecting lines above Mauch Chunk	161,280
Total	5,036,556

TRADE NAMES OF ANTHRACITE COAL

The Geological Field, Character of Coal, Mining Districts and Trade Names of Coal Coming from Each District Is Given Below.

Geological Field	Character of Coal	Mining District	Trade District
		1 Carbondale	Wyoming
	Free-Burning White-ash	2 Scranton	"
Northern	Wyoming Red-ash	3 Pittston	"
		4 Wilkes-Barre	"
		5 Plymouth	"
		6 Green Mountain	Lehigh
Eastern Middle	Hard White-ash	7 Black Creek	"
	Lehigh Red-ash	8 Hazleton	"
		9 Beaver Meadow	"
	Hard White-ash	10 East Mahanoy	Schuylkill
Western Middle	Free-Burning White-ash.	11 West Mahanoy	"
	Shamokin		
	Trevorton	12 Shamokin	"
	Schuylkill Red-ash	13 Panther Creek	Lehigh
Southern	Hard White-ash	14 East Schuylkill	Schuylkill
	Free-Burning White-ash.	15 West Scmuylkill	"
	Lorberry Red-ash	16 Lorberry	"
	Lykens Valley Red-ash	17 Lykens Valley	"

Anthracite Coal Shipments by Regions.

The shipments of anthracite coal from the various regions for years 1908-1922 have been as follows:

	Schuylkill	Lehigh	Wyoming	Total
1908	18,006,464	7,786,255	38,372,295	64,665,014
1909	16,864,147	7,532,271	37,573,467	61,969,885
1910	17,845,020	8,627,539	38,433,227	64,905,786
1911	19,375,369	9,775,018	40,805,912	69,954,299
1912	18,013,406	8,571,861	37,025,311	63,610,578
1913	19,338,870	10,046,282	40,388,175	69,773,327
1914	18,494,087	10,255,620	40,760,803	69,511,110
1915	18,039,888	10,304,652	39,539,236	67,883,776
1916	19,888,310	9,654,000	37,834,054	67,376,364
1917	22,715,086	11,255,490	43,162,729	77,133,305
1918	22,755,365	11,511,760	42,382,793	76,649,918
1919	19,899,519	10,266,479	36,689,313	66,855,311
1920	21,517,211	9,860,611	37,249,303	68,627,125
1921	20,184,799	8,910,348	38,522,566	67,617,713
1922	12,963,674	5,565,532	22,286,566	40,875,772

Shipments from the Wyoming region as compared with 1921 decreased 16,236,000 tons, or 42.1 per cent; the Lehigh region decreased 3,344,816 tons, or 37.5 per cent, while the Schuylkill region decreased its shipments 7,221,125 tons, or 35.7 per cent, according to the above statistics.

ANALYSES OF PENNSYLVANIA ANTHRACITE

Elements as Shown by Mine Samples and by Commercial Coal in Various Sizes.

Analyses of anthracite are frequently desired by the trade. As is generally known, producers of this coal do not seek to exploit the constituent elements, as is the case of some producers of bituminous coal, and the amount of material available on this subject is accordingly somewhat limited. In this branch of the trade much depends on the size of the coal, as of course, small coal is bound to carry a larger amount of slate and other impurities, and consequently a greater degree of ash.

There are other circumstances that make analyses less valuable than in the case of bituminous coal, but as a basis at least for investigations along this line we give below certain analyses of the actual coal as shown by mine samples and in addition certain analyses of commercial coal according to sizes.

Analyses of Mine Run Anthracite.

The following figures show certain analyses of Pennsylvania run-of-mine anthracite coal, taken from mine samples in the different fields:

Northern Field.

	Per Cent
Moisture	2.00
Vol. Matter	6.00
Fixed Carbon	84.40
Ash	7.00
Sulphur	0.60

Western-Middle Field.

	Per Cent
Moisture	3.30
Vol. Matter	3.80
Fixed Carbon	81.50
Ash	10.65
Sulphur	0.75
Specific Gravity	1.66

Eastern-Middle Field.

	Per Cent
Moisture	3.90
Vol. Matter	3.10
Fixed Carbon	86.40
Ash	6.00
Sulphur	0.60
Specific Gravity	1.62

Southern Field.

(Panther Creek)

	Per Cent
Moisture	3.00
Vol. Matter	4.00
Fixed Carbon	88.00
Ash	5.00
Sulphur	0.60

Southern Field.

(West Schuylkill)

	Per Cent
Moisture	3.00
Vol. Matter	2.00
Fixed Carbon	85.00
Ash	10.00
Sulphur	0.80

Analyses of Anthracite Sizes.

On following pages are some average analyses of the various anthracite sizes as they appear in Waldeigh's Coal Manual:

Sampled by the United States Bureau of Mines.

Size	Moisture	B. T. U.	As Reed B. T. U.	Dry Ash	No. of Analyses
Broken	3.87	12,782	13,928	11.11	12
Egg	4.60	12,658	13,268	11.30	4
Stove	3.81	12,585	13,084	12.05	19
Chestnut	4.80	12,365	12,988	12.48	6
Pea	3.85	12,150	12,637	15.25	119
Buck. No. 1	4.66	11,449	12,009	18.54	49
Buck. No. 2	7.56	11,365	12,295	16.77	18

Range of Analyses of Pennsylvania Anthracite Coal, as Shipped.

Size	Ash Per Ct.	Fixed Carbon Per Ct.	Volatile Matter Per Ct.	Moisture Per Ct.	Sulphur Per Ct.
Broken	7-10	81-84	4 to 6	1 to 2	0.7
Egg	8-11	80-83	4 to 6	1 to 2	0.7
Stove	9–12	79–81	4 to 6	1 to 2	0.7
Chestnut	10-13	77-80	4 to 6	3 to 4	0.7
Pea	13-15	76-78	4 to 6	3 to 4	0.7
Buck. No. 1	16-20	71-75	4 to 6	3 to 4	0.7
Buck. No. 2	18-22	69-73	4 to 6	3 to 4	0.7
Buck. No. 3	20-25	66-71	4 to 6	4 to 6	0.7

A Review of Anthracite Prices.

The course of anthracite prices since 1914 is shown by the following figures. The quotations on No. 1 buckwheat are for independent tonnage, f. o. b. New York harbor lower ports, and are for the available date nearest the 15th of the month specified. The quotations on stove, which are f. o. b. mines, represent the company circular.

No. 1 buckwheat, f. o. b. New York lower ports; gross tons.

1914—January $2.25	April $2.40	July $2.15	October $3.35
1915—January $2.45	April $2.45	July $2.15	October $2.40
1916—January $2.75	April $2.00	July $2.40	October $2.80
1917—January $2.85	April $3.80	July $3.95	October $3.95
1918—January $4.35	April $4.50	July $5.15	October $5.15
1919—January $4.45	April $4.75	July $4.74	October $4.75
1920—January $5.25	April $5.75	July $6.50	October $8.00
1921—January $6.75	April $5.50	July $5.10	October $5.50
1922—January $4.75	April *	July *	October $6.25

Stove coal, f. o. b. mines; gross tons:

1914—January $4.00	April $3.50	July $3.80	October $4.00
1915—January $4.00	April $3.50	July $3.80	October $4.00
1916—January $4.10	April $3.60	July $4.20	October $4.40
1917—January $4.40	April $3.90	July $4.20	October $4.70
1918—January $5.05	April $4.75	July $4.75	October $5.05
1919—January $6.10	April $6.10	July $6.40	October $6.60
1920—January $6.60	April $6.60	July $6.50	October $8.00
1921—January $8.00	April $7.40	July $7.90	October $8.50
1922—January $8.00	April *	July *	October $9.25

* Strike.

STEADY DAYS IN ANTHRACITE

Private Initiative Fixed Price at Fair, Even Figure for a Decade.

In the midst of criticism of anthracite prices at the present time, it will be well to remember that for many years, while the reduced purchasing power of money was causing commodity prices to advance on a steadily increasing scale, anthracite prices were unchanged.

For nine years there was no change in the price of stove coal. Then there was an increase of 25 cents. The next year the anthracite tax law of 1913 added 10 cents. During the two following years there was no change.

So that in a period of 13 years the price increased only 35 cents. It was not until the country entered upon war conditions that any substantial increase occurred.

Reference to the details in the following material from an authentic source will be found useful:

Tidewater Prices, White Ash Anthracite.

Year	Broken	Egg	Stove	Nut
1902	$4.75	$5.00	$5.00	$5.00
1903	No change			
1904	No change			
1905	No change			
1906	No change			
1907	No change			
1908	No change			
1909	No change			
1910	No change			
1911	No change			5.25
1912	5.00	5.25	5.25	5.50
1913	Tax law added 10 cents			
1914	No change			
1915	No change			
1916	4.90	5.40	5.65	5.70
1917	6.40	6.30	6.55	6.65

At one time upwards of 95 per cent of the anthracite tonnage was sold at the above circular prices, the large transportation interests buying coal from individual operators under the so-called percentage contracts. These were, after extended litigation, declared illegal by the U. S. Supreme Court in all except a very few instances where special terms prevailed. But, in view of the decision, even those contracts were allowed to lapse at date of expiration. As one reviews the situation it must be manifest that the public was being well served in regard to its hard coal supplies in the period 1902-1917.

On page 83 will be found further information concerning prices.

The Ruhr River Valley is an oblong basin of coal-beds, about 30 miles wide at the Rhine, narrowing to about 15 miles beyond Dortmund, and 50 miles long. It is the heart of the coal and steel industry of Germany.

Anthracite Coal Shipments by Railroads.

Philadelphia & Reading.

Month	1917	1918	1919	1920	1921	1922
January	1,150,147	932,146	1,155,803	1,155,092	1,172,873	1,052,072
February	966,725	1,107,982	725,809	1,038,303	1,170,753	1,160,685
March	1,375,051	1,339,051	617,229	‡1,295,221	1,018,858	1,372,024
April	1,004,028	1,233,512	1,044,192	1,055,190	1,123,585	*
May	1,341,587	1,356,878	1,156,119	1,298,295	1,108,476	*
June	1,341,370	1,345,079	1,084,635	1,165,339	1,157,738	*
July	1,256,316	1,420,624	1,131,451	1,251,791	1,039,078	*
August	1,373,473	1,408,501	1,142,714	1,401,849	1,116,844	*
September	1,246,100	1,231,435	1,140,727	537,176	1,081,085	926,516
October	1,425,265	1,115,340	1,240,001	1,317,070	1,104,828	1,266,092
November	1,329,259	1,137,170	1,358,643	1,238,994	1,017,409	1,224,990
December	1,101,919	1,209,677	1,442,571	1,324,004	985,262	1,259,927
Total gross.	14,910,240	14,837,395	12,289,893	14,078,324	13,696,789	8,263,106

Lehigh Valley.

Month	1917	1918	1919	1920	1921	1922
January	985,830	983,964	1,048,173	1,011,116	1,058,127	766,602
February	909,704	1,042,784	643,551	928,208	1,063,508	857,579
March	1,234,871	1,355,933	622,746	‡1,125,100	1,022,714	1,220,563
April	988,873	1,175,027	865,924	898,929	1,102,965	*
May	1,275,513	1,328,464	1,030,160	1,130,707	1,027,688	*
June	1,347,205	1,352,820	1,041,696	1,150,977	1,069,521	*
July	1,254,647	1,319,731	1,111,420	1,217,642	946,387	*
August	1,245,786	1,350,331	1,171,026	1,159,816	924,649	*
September	1,258,922	1,167,784	1,122,823	534,440	‡966,600	950,769
October	1,314,896	1,216,391	1,209,341	1,180,270	1,048,996	1,166,195
November	1,158,158	973,865	1,079,266	1,002,329	913,737	1,109,449
December	995,102	1,010,231	1,057,627	1,161,305	801,796	1,107,745
Total gross.	13,969,507	14,287,325	12,003,687	12,500,839	11,956,688	7,178,902

Jersey Central.

Month	1917	1918	1919	1920	1921	1922
January	618,188	612,979	479,990	513,444	470,704	542,558
February	536,023	638,557	334,697	408,452	515,551	537,214
March	785,209	777,642	309,994	‡480,100	540,556	654,679
April	626,501	649,621	481,781	305,465	537,822	*
May	735,758	566,974	498,391	483,352	544,716	*
June	771,365	622,005	508,702	525,662	571,213	*
July	737,131	641,547	544,171	536,419	507,942	*
August	753,197	644,186	560,331	510,593	544,007	*
September	686,717	571,147	551,724	348,978	576,875	345,447
October	756,659	601,180	639,824	486,609	570,189	617,668
November	679,198	450,360	506,737	453,139	512,613	583,835
December	600,694	469,087	506,840	497,735	532,597	564,071
Total gross.	†8,286,640	7,245,276	5,941,412	5,549,948	5,424,785	3,845,672

†1,338,554 tons also included in Lehigh and New England tonnage, this amount being reported by both roads. ‡Estimated. *Strike.

Delaware, Lackawanna & Western.

Month	1917	1918	1919	1920	1921	1922
January	1,000,383	1,029,977	934,369	935,242	910,260	744,768
February	910,098	997,550	597,604	827,172	920,788	755,923
March	1,162,230	1,155 587	658,694	‡840,100	1,020,381	1,047,622
April	893,458	1,008,018	885,215	545,419	929,271	*.....
May	1,090,649	1,037,603	914,301	844,464	915,191	*.....
June	1,085,072	1,015,438	903,306	891,481	1,009,119	*.....
July	1,052,944	1,034,561	980,100	908,538	926,850	*.....
August	1,118,986	1,048,346	936,212	878,222	953,014	*.....
September	973,529	927,608	758,940	642,016	736,571	560,717
October	1,153,661	982,966	963,618	846,054	759,492	936,375
November	1,012,230	776,506	860,356	792,157	814,131	896,182
December	964,780	870,509	907,119	940,915	626,327	930,530
Total gross..	12,409,120	11,884,669	10,299,834	9,891,780	10,513,778	5,880,117

Delaware & Hudson.

Month	1917	1918	1919	1920	1921	1922
January	667,035	636,875	717,045	614,375	814,491	619,762
February	482,638	600,799	629,929	455,003	813,191	670,323
March	728,857	861,253	671,829	‡840,100	837,644	909,261
April	639,495	771,553	603,479	833,254	812,967	*.....
May	774,278	825,990	667,227	845,033	753,039	*.....
June	818,337	773,691	661,991	901,325	763,893	*.....
July	758,695	820,530	731,385	833,254	691,132	*.....
August	781,606	846,788	716,333	845,033	756,982	*.....
September	698,731	736,497	553,149	901,325	711,199	533,858
October	813,429	739,495	797,041	893,058	898,376	828,216
November	786,381	624,335	663,782	814,167	756,598	876,861
December	584,234	676,878	674,172	896,475	654,987	832,893
Total gross..	8,533,716	8,914,684	8,087,362	9,670,402	8,264,499	5,271,174

Pennsylvania.

Month	1917	1918	1919	1920	1921	1922
January	458,896	458,408	442,059	404,375	451,879	331,871
February	428,230	459,271	273,031	394,366	426,350	402,762
March	517,704	519,806	338.977	‡425,100	333,687	523,273
April	433,314	448,374	383,250	408,490	416,847	*.....
May	498,052	493,380	401,918	438,144	409,027	*.....
June	500,037	482,737	372,658	497,153	441,693	*.....
July	510,941	504,630	433,517	408,490	384,780	*.....
August	504,819	504,367	438,214	438,144	360,817	*.....
September	422,482	438,068	431,514	497,953	426,344	382,007
October	430,662	393,885	465,544	484,940	492,632	579,306
November	457,970	364,193	406,606	424,745	429,638	546,214
December	447,739	870,509	414,155	457,242	307,520	561,603
Total gross..	5,610,846	5,518,207	4,801,453	5,519,042	4,881,114	3,327,036

‡Estimated.

Erie.

Month	1917	1918	1919	1920	1921	1922
January	683,047	632,332	687,241	636,430	606,602	466,495
February	637,325	614,210	371,033	491,608	633,706	492,262
March	792,453	864,968	451,572	‡630,000	561,013	654,492
April	664,609	695,186	581,453	346,144	630,471	*.....
May	786,995	761,436	621,326	643,930	630,574	*.....
June	807,047	756,257	616,939	710,212	555,882	*.....
July	768,245	824,242	663,421	547,919	619,365	*.....
August	812,114	847,169	678,437	358,740	628,280	*.....
September	717,129	703,363	640,444	285,074	631,882	497,841
October	793,226	731,694	698,613	531,598	618,034	701,270
November	720,308	554,026	620,703	603,766	503,488	706,747
December	659,396	656,689	679,827	675,979	450,465	738,073
Total gross..	8,841,894	8,641,582	7,311,009	6,461,400	7,069,862	4,257,180

N. Y., O. & W.

Month	1917	1918	1919	1920	1921	1922
January	164,675	171,667	156,328	168,447	156,564	101,779
February	143,711	177,047	108,029	135,957	153,017	141,929
March	185,496	199,680	88,116	‡165,000	144,930	154,681
April	145,179	185,650	144,856	160,306	128,684	*.....
May	179,386	177,072	167,403	173,913	153,809	*.....
June	181,965	186,948	167,327	176,604	165,742	*.....
July	168,915	167,656	176,524	177,427	110,605	*.....
August	186,679	170,313	182,450	177,451	98,355	*.....
September ...	155,886	157,387	176,492	149,260	123,742	128,847
October	179,403	165,205	187,926	190,958	126,925	179,865
November ...	161,615	124,700	161,385	175,074	136,945	161,660
December ...	157,814	150,063	171,465	164,557	107,107	159,829
Total gross..	2,010,724	2,033,388	1,882,601	2,014,654	1,604,425	1,028,590

Lehigh & New England.

Month	1917	1918	1919	1920	1921	1922
January	284,021	268,364	295,233	274,970	99,038	221,346
February	225,944	286,147	188,249	234,995	269,237	220,337
March	323,157	356,888	129,751	‡277,100	257,988	242,072
April	298,220	322,167	234,565	261,014	284,453	*.....
May	352,920	339,459	254,940	298,040	251,375	*.....
June	335,602	332,694	262,337	300,400	299,136	*.....
July	349,845	351,254	280,345	295,341	236,621	*.....
August	392,643	360,922	318,428	290,470	192,167	*.....
September ...	340,396	306,106	311,588	116,310	265,114	181,550
October	396,113	340,210	358,138	310,344	253,311	292,941
November ...	362,202	271,504	314,193	260,976	229,455	314,164
December ..	288,109	277,038	284,684	318,508	169,811	292,205
Total gross..	†3,949,172	‡3,812,753	3,232,450	3,238,468	2,809,006	1,754,615

Included in the above yearly totals is. †1,338,554 in 1917, and ‡475,300 in 1918 transferred by this company to the Central R. R. of New Jersey, at Hauto, Pa., and included in similar report of the latter company. ‡Estimated.

Shipments of Anthracite Coal, by Months.

The shipments of anthracite coal by months for six years have been as follows:

Month	1917	1918	1919	1920†	1921	1922
January	5,940,725	5,726,712	5,934,231	5,868,835	5,740,538	4,848,053
February	5,178,432	5,812,082	3,871,932	5,046,483	5,966,101	5,239,014
March	6,989,075	7,276,777	3,938,908	†6,077,821	5,737,771	6,778,667
April	5,592,299	6,368,373	5,224,715	4,814,211	5,967,465	.....
May	6,917,525	6,887,256	5,711,915	6,155,875	5,793,895	.....
June	7,049,037	6,867,669	5,619,591	6,319,957	6,031,937	.....
July	6,724,252	7,084,775	6,052,334	6,389,100	5,462,760	.....
August	7,019,001	7,180,923	6,144,144	6,207,653	5,575,115	.....
September	6,372,756	6,234,395	6,687,401	3,592,954	5,519,412	‡4,507,132
October	7,110,950	6,296,366	6,560,150	6,240,901	5,872,783	6,567,928
November	6,545,313	5,276,659	5,971,671	5,765,347	5,314,014	6,420,102
December	5,698,945	5,736,260	6,138,460	6,436,320	4,635,922	6,454,876
Total	77,133,305	76,649,918	66,855,462	68,915,460	67,617,713	40,815,777

† Estimated.

‡ Includes scattering shipments in April of coal mined latter part of March.

No shipments in April, May, June, July and August on account of strike.

The record of large monthly tonnages runs as follows:

Jan., 1923.....6,671,822	May, 1917.....6,917,525	Sept., 1917.....6,372,756
Feb., 1921.....5,966,101	June, 1917.....7,049,037	Oct., 1917.....7,110,950
Mar., 1918.....7,276,777	July, 1918.....7,084,775	Nov., 1917.....6,545,313
Apr., 1915.....6,665,625	Aug., 1918.....7,189,923	Dec., 1922.....6,454,876

There is no high record month back of January, 1913.

Shipments Tell Trade Story.

The U. S. Geological Survey presents certain statements in net tons showing total monthly production of anthracite but it occurs to us that the trade is so accustomed to tabulations showing the shipments of coal in gross tons that the publication of these other details serves merely to confuse. Of course the shipments rise and fall more or less in proportion to the production (although not precisely so) and yet it seems to us that it is much more advantageous to restrict the comparative monthly statements to the customary form of shipments in gross tons and thus avoid the confusion which is practically certain to arise when statements are presented which differ by something like 25 per cent from the information that the trade is accustomed to.

As a matter of record, we present the Survey figures below:

Production during the year 1913 amounted to 91,525,000 tons; 1914, 90,822,000 tons; 1915, 88,995,000 tons; 1916, 87,578,000 tons; 1917, 99,612,000 tons; 1918, 98,826,000 tons; 1919, 88,092,000 tons; 1920, 89,598,249; 1921, 87,500,000.

Exports of bituminous coal from El Paso Customs District during 1922 amounted to 45,124 tons. Coke tonnage was 3,692 tons and anthracite 1,088 tons.

Anthracite Coal Shipments Yearly Since Outset.

Year	Tons	Year	Tons	Year	Tons	Year	Tons
1807	55	1845	2,013,013	1871	15,699,721	1897	41,637,864
1820	365	1846	2,344,005	1872	19,669,778	1898	41,899,751
1821	1,073	1847	2,882,309	1873	21,227,952	1899	47,665,204
1822	3,720	1848	3,089,238	1874	20,145,121	1900	45,107,484
1823	6,951	1849	3,242,966	1875	19,712,472	1901	53,568,601
1824	11,108	1850	3,358,899	1876	18,501,011	1902	31,200,890
1825	34,893	1851	4,448,916	1877	20,828,179	1903	59,362,831
1826	48,047	1852	4,993,471	1878	17,605,262	1904	57,492,522
1827	63,434	1853	5,195,151	1879	26,142,689	1905	61,410,201
1828	77,516	1854	6,002,334	1880	23,437,242	1906	55,698,595
1829	112,083	1855	6,608,567	1881	28,500,017	1907	67,109,393
1830	174,734	1856	6,927,580	1882	29,120,096	1908	64,665,014
1831	176,820	1857	6,644,941	1883	31,793,027	1909	61,969,885
1832	363,271	1858	6,839,369	1884	30,718,293	1910	64,905,786
1833	487,749	1859	7,808,255	1885	31,623,530	1911	69,954,299
1834	376,636	1860	8,513,123	1886	32,136,362	1912	63,610,578
1835	560,758	1861	7,954,264	1887	34,641,018	1913	69,069,628
1836	684,117	1862	7,869,407	1888	38,145,718	1914	68,342,601
1837	869,441	1863	9,566,006	1889	35,817,093	1915	67,883,776
1838	738,697	1864	10,177,475	1890	36,615,459	1916	67,376,364
1839	818,402	1865	9,652,391	1891	40,448,336	1917	77,133,305
1840	864,379	1866	12,703,882	1892	41,893,340	1918	76,649,918
1841	959,773	1867	12,988,725	1893	43,089,537	1919	66,855,462
1842	1,108,412	1868	13,801,465	1894	41,391,200	1920	68,915,460
1843	1,263,598	1869	13,866,180	1895	46,511,477	1921	67,617,713
1844	1,630,850	1870	16,182,191	1896	43,177,485	1922	40,815,777

Anthracite used at the mines and breakers for steam and heat represents more than 10 per cent of the total output and is not included above.

Census Data on Anthracite.

The Census Bureau issued a statement making some comparisons between conditions in the anthracite region in 1909 and 1919. It is stated that the number of mine workers decreased from 169,000 to 147,000 during the decade, but production last year was 6,302,000 tons greater than in 1909.

The value of coal produced increased from $145,881,000 to $364,243,000, while wages advanced from $92,169,000 to $210,202,000.

Mine operators had an invested capital of $246,713,000 ten years ago, but the properties were estimated to be worth $432,391,000 in 1919. An analysis of the operators' expenses showed that while they paid taxes aggregating $7,969,000 in 1909, the taxes in 1919 were $11,762,000, and their rents and royalties grew during the period from $3,356,000 to $14,066,000.

Exports of bituminous coal from New Orleans during 1922 amounted to 8,705 tons. Coke tonnage exported amounted to 9,987 tons.

Anthracite Shipped in 1921, by Regions and Sizes, in Gross Tons.

Size	Lehigh Region			Schuylkill Region		
	Mines	Washeries	Dredges	Mines	Washeries	Dredges
Lump	.....	.....	.....	9,703	.....	.....
Broken	174,262	1,145	.....	641,957	3,507	.....
Egg	1,307,612	12,221	.....	2,520,409	5,496	.....
Stove	1,757,426	16,293	.....	3,793,819	4,991	.....
Chestnut	2,358,864	38,244	.....	4,807,884	53,948	.....
Pea	981,552	26,596	865	2,020,455	47,060	28
Buckwheat No. 1	1,233,111	28,518	1,165	3,347,167	103,958	40,423
Buck. No. 2 and Rice	598,681	29,082	.....	1,151,726	90,587	2,915
Buck. No. 3 and Barley	563,106	89,537	19,569	1,043,122	130,317	40,680
Boiler	15,493	1,308	.....	4,985	21	68,799
Other *a*	102,595	.....	.....	41,638	9,505	73,068
Totals	9,092,702	242,944	21,599	19,382,865	449,390	225,913

Size	Wyoming Region			Sullivan County Mines	Total	Percentage of Total
	Mines	Washeries	Dredges			
Lump	2,627	.....	.....	.....	12,330	...
Broken	1,643,335	68	.....	10,416	2,474,690	3.6
Egg	6,361,616	6,990	.....	25,515	10,239,859	14.7
Stove	9,035,728	35,344	.....	44,037	14,687,638	21.1
Chestnut	11,235,371	76,837	.....	65,534	18,636,682	26.8
Pea	2,684,236	68,646	1,280	34,661	5,865,379	8.4
Buckwheat No. 1	4,479,479	113,228	1,960	.....	9,349,009	13.4
Buck. No. 2 and Rice	2,508,298	134,325	.....	.....	4,515,614	6.5
Buck. No. 3 and Barley	1,128,820	146,368	3,199	.....	3,164,718	4.6
Boiler	147,082	29,748	10,760	.....	278,196	.4
Other *a*	41,571	4,548	.....	57,523	330,448	.5
Totals	39,268,163	616,102	17,199	237,686	69,554,563	100.0

(a) Includes quantity reported as culm, buckwheat No. 4, screenings, settlings, silt, mine run, dirt, and slush.

Impurities Permitted in Anthracite.

The impurities permitted in coal shipped under the old "65 per cent. contract" are not to exceed the percentages given in the following statement:

	Per Cent. Slate, Rock, Etc.	Per Cent. Bone.
Broken	1	2
Egg	2	2
Stove	4	3
Chestnut	5 to 7*	5
Pea	10	†
Buckwheat	15	†
Rice	20	..

*Average shall not exceed 5 per cent. and maximum shall never exceed 7 per cent.
†Bone content shall not reduce price below average for these sizes.

Anthracite Produced in 1921—By Regions

We show below tonnage produced in the several anthracite regions, this including quantity shipped, amount of local sales and coal used for power. All figures are in gross tons.

Region	Shipments Quantity	Local Sales Quantity	Used for Power Quantity	Total Production Quantity
LEHIGH:				
Freshly mined coal.....	9,092,702	537,329	1,117,214	10,747,245
Washery product.....	242,944	14,272	1,398	258,614
Dredge product.....	21,599	.....	150	21,749
	9,357,245	551,601	1,118,762	11,027,608
SCHUYLKILL:				
Freshly mined coal.....	19,382,865	435,606	3,311,935	23,130,406
Washery product.....	449,390	.....	88,843	538,233
Dredge product.....	225,913	286,725	4,550	517,188
	20,058,168	722,331	3,405,328	24,185,827
WYOMING:				
Freshly mined coal.....	39,268,163	1,227,457	3,834,466	44,330,086
Washery product.....	616,102	241	303,442	919,785
Dredge product.....	17,199	308	100	17,607
	39,901,464	1,228,006	4,138,008	45,267,478
SULLIVAN COUNTY:				
Freshly mined coal.....	237,686	9,268	52,000	298,954
Total freshly mined coal..	67,981,416	2,209,660	8,315,615	78,506,691
Total washery product....	1,308,436	14,513	393,683	1,716,632
Total dredge product.....	264,711	287,033	4,800	556,544
GRAND TOTAL.....	69,554,563	2,511,206	8,714,098	80,779,867

Coal Exports to Argentina.

Exports of bituminous coal to Argentina, by months, during 1922 and four years previous, with average price per ton in 1919, 1920, 1921 and 1922 were (gross tons):

Month	1918	1919	1920	1921	1922	—Aver. Price— 1919	1920	1921	1922
January ...	11,579	43,484	145,455	107,135	14,566	$6.29	$6.72	$9.87	$9.92
February .	22,609	38,993	70,902	50,838	4,054	6.16	6.62	8.72	12.44
March ...	25,623	8,670	80,346	68,562	37,591	5.97	6.67	8.88	6.04
April	9,869	14,914	115,702	61,175	....	5.44	7.63	10.01	...
May	14,750	22,589	101,144	113,730	2,291	5.09	9.63	7.81	5.13
June	43,035	54,736	120,267	92,727	12,893	5.24	10.11	7.51	5.25
July	47,528	28,712	157,907	97,512	7,576	5.50	13.57	7.08	6.15
August ..	....	69,728	182,740	47,835	....	5.96	15.28	9.37	...
September.	2,738	85,684	276,680	36,659	....	6.04	12.83	9.95	...
October ..	....	95,865	268,053	23,936	....	6.60	15.24	8.95	...
November.	1,168	19,954	107,048	26,943	....	6.89	14.01	9.52	...
December.	....	....	119,763	22,384	....	...	11.62	8.17	...
Total ...178,899		483,329	1,746,007	752,636	78,971	...	...	...	...

Standard Sizes and Preparation of Anthracite.

The following dimensions specified indicate meshes for screening anthracite coal:

It is understood that there are no square mesh screens now used in the sizing of anthracite and while it cannot be said that there is any actual standard, if we use that word in a strict sense, the following dimensions are generally supposed to prevail:

	Through	Over
Broken	4½" round	3⅛" round
Egg	3¼" "	2¼" to 2⅝" "
Stove	2¼" to 2⅜" "	1½" to 1⅝" "
Nut	1½" to 1⅝" "	¾" to ⅞" "
Pea	¾" to ⅞" "	½" to 9/16" "
Buckwheat	½" to 9/16" "	5/16" "
Rice	5/16" "	3/16" "
Barley	3/16" "	1/16" "

The percentages of foreign matter allowed are as follows:

Size	State	Bone
Broken (or Grate)	1 per cent.	2 per cent.
Egg	2 per cent.	2 per cent.
Stove	4 per cent.	3 per cent.
*Chestnut	5 to 7 per cent.	5 per cent.
Pea	8 per cent.	10 per cent.
Buckwheat	10 per cent.	10 per cent.

*An allowance is made on chestnut of from 12½ to 15 per cent of pea coal.

With regard to the sizing of anthracite, it is understood that the Fuel Administration set the following standard which operators are supposed to live up to:

Egg coal may contain not over 12 per cent. of broken and 15 per cent. of stove.

Stove, 12 per cent. of egg and 15 per cent. of chestnut.

Chestnut, 5 per cent. of stove and 15 per cent. of pea.

Pea, 5 per cent. of chestnut and 30 per cent. of smaller sizes, the latter not to include more than 3 per cent. of No. 2 buckwheat.

It will be seen that the Fuel Administration allowed the operators more leeway, establishing a more liberal policy.

Sizes are used, chiefly, for following purposes:

Broken—Gas-making, other manufacture, and steam-raising.

Egg—Domestic furnaces and open grates.

Stove—Kitchen ranges, base burners (sometimes mixed with chestnut), small furnaces, open grates.

Chestnut—Kitchen ranges, small stoves, base burners (sometimes mixed with stove), and small open grates.

Pea—Domestic furnaces with small openings in grate, kitchen ranges, and "banking" fires.

Buckwheat No. 1—Steam-making and self-feeding domestic furnaces.

Rice—Steam-making.

Barley—Steam-making.

Girard Estate Production and Shipments.

The 1922 report of James Archbald, mining engineer and agent of the Girard Estate, shows that, counting pea as small coal, the shipments of large and small coal from the operations on the Girard Estate have been as follows

	Large Coal.		Small Coal.	
	Tons.	Per Cent.	Tons.	Per Cent.
1922	1,108,794	54.08	941,464	45.92
1921	1,753,721	58.78	1,230,002	41.22
1920	1,785,578	55.26	1,445,502	44.74
1919	1,511,243	55.81	1,196,711	44.19
1918	1,763,916	52.58	1,590,851	47.42
1917	1,825,762	55.80	1,446,450	44.20
1916	1,480,829	54.48	1,237,283	45.52
1915	1,145,941	58.42	815,622	41.58
1910	1,096,574	58.37	782,056	41.63
1905	1,068,540	58.62	754,358	41.38
1900	627,093	57.41	465,263	42.59
1895	1,056,653	70.95	432,705	29.05
1890	1,042,215	79.37	270,881	20.63
1885	919,138	80.55	221,996	19.45
1880	1,104,097	88.21	147,588	11.79
1875	644,557	91.48	59,987	8.52
1870	455,168	96.43	16,830	3.57
1865	240,466	100.00	.....	.....
1863	40,789	100.00	.....	.....

Tonnage for 1900 curtailed by strike. Excluding the coal reclaimed from culm banks, the proportions of large and small coal have been as follows:

	Large Coal.		Small Coal.	
	Tons.	Per Cent.	Tons.	Per Cent.
1922	1,023,936	60.03	681,714	39.97
1921	1,666,601	63.40	962,035	36.60
1920	1,610,518	63,63	920,507	36.37
1919	1,415,478	64.08	793,503	35.92
1918	1,626,228	59.74	1,096,125	40.26
1917	1,671,089	61.01	1,068,143	38.99
1916	1,427,267	58.99	992,135	41.01
1915	1,125,503	61.46	705,652	38.54
1910	1,080,600	63.61	618,188	36.39
1905	1,054,403	62.99	619,588	37.01
1900	625,422	63.31	362,227	36.69
1897	852,895	70.71	353,213	29.29

Tonnage for 1900 curtailed by strike.

Coal Reclaimed from Culm Banks.

Year.	Tons.	Cwt.	Per Cent of Total Shipment.	Year.	Tons.	Cwt.	Per Cent of Total Shipment.
1889–1900...	194,023	16	1.22	1911.....	353,665	08	16.36
1901–1910...2,178,147		02	13.39	1912.....	409,907	13	20.86

Year.	Tons.	Cwt.	Per Cent of Total Shipment.	Year.	Tons.	Cwt.	Per Cent of Total Shipment.
1913.....	204,152	08	10.32	1918.....	632,414	08	18.85
1914.....	168,187	..	8.84	1919.	498,973	10	18.43
1915.....	130,408	08	6.65	1920.....	700,055	03	21.67
1916.....	298,709	10	10.99	1921.....	355,086	19	11.90
1917.....	532,979	16	16.29	1922.....	344,607	19	16.81

Population Growing in Anthracite Consuming States.

When the pressure of demand for anthracite became pronounced in 1917 and 1918 various statements were made with reference to increased population in the Northeastern section of our country being responsible for a considerable part of the demand. In fact, it was asserted on the authority of the office of the Provost Marshal General in connection with the application of the selective draft law that there had been an increase in population of nearly 5,000,000 in the states of the Northeast where large war industries were located as compared with the figures of 1910.

A more substantial basis is given to the assertions made by the census figures of 1920 which give the actualities of this record. And, while the number is nearer four million than five it will be seen that the states of the Northeastern section where anthracite is particularly the domestic fuel, have grown much in the last ten years and as is well known the increase in population is largely centered in the industrial cities and towns, the agricultural districts and smaller communities remaining practically at a standstill, if indeed they have not shown a decrease in population.

	1910.	1920.		1910.	1920.
Connecticut	1,114,756	1,380,385	New Jersey.....	2,537,167	3,155,374
Delaware	202,322	223,003	New York	9,113,614	10,384,144
Dist. of Columbia.	331,069	437,571	Pennsylvania	7,665,111	8,720,159
Maine	742,371	767,996	Rhode Island.....	595,986	604,379
Maryland	1,295,346	1,449,610	Vermont	355,956	352,421
Massachusetts ...	3,693,310	3,851,615	Totals	28,977,580	31,771,740
New Hampshire..	430,572	443,083	Total increase.....		3,694,160

River Coal Industry.

Surveys of the river coal industry for 1921 by the Bureau of Statistics and Information of the Pennsylvania Department of Internal Affairs show that coal was reclaimed from the Susquehanna, Schuylkill and Lehigh Rivers in Berks, Columbia, Dauphin, Luzerne, Montour, Northumberland and Schuylkill Counties.

Dauphin led all the other counties in the number of tons produced, a total of 247,747 tons being reclaimed in 1921. Northumberland County stood second in production, with 103,305 tons.

In 1921 there were 551,100 tons reclaimed. A table showing the counties in which river coal was reclaimed in that year and the production, follows:

Counties	Tons	Counties	Tons	Counties	Tons
Berks	20,928	Dauphin	247,747	Montour	580
Columbia	4,942	Luzerne	25,582	Northumberland..	103,305
		Schuylkill	73,316		

PENNSYLVANIA MINE CAVE LAW INVALID

U. S. Supreme Court Upsets Kohler Act Which Prescribed Prison Terms for Anthracite Officials.

The Kohler mine cave law, passed by the Pennsylvania Legislature in 1921, was declared unconstitutional by the United States Supreme Court in a decision handed down December 11, 1922. This act, which went into effect on August 28, 1921, made it unlawful to mine anthracite coal in a way that would endanger buildings or the lives of persons occupying same by the caving in of the surface.

It held the officials of mining companies personally responsible for damages and provided for prison terms as well as fines. So drastic were its provisions that several collieries of the Glen Alden Coal Co. and other companies operating in Scranton and vicinity were closed down.

The case passed upon by the Supreme Court, which was brought in the name of H. J. McMahon and Margaret Craig McMahon against the Pennsylvania Coal Co., originated in Scranton, when a number of houses were damaged by mine cave-ins. The Supreme Court held that the state had exceeded its police powers in the passage of the law, and that it deprived owners of the coal of valuable propery rights without compensation.

Defendant Had Mining Rights.

In the process of this suit through the Pennsylvania courts the coal company displayed a deed to the surface property, executed in 1873, giving the purchaser the right to the surface, but stipulating that the coal beneath it might be removed. On this ground the coal company argued that the purchaser of the surface land took the premises with the risk, and waived all claims for damages that might result from the mining of coal.

The Court of Common Pleas held that the Kohler act, if applied to the case at issue, would be unconstitutional. The Supreme Court of Pennsylvania agreed that the coal company had contract and property rights protected by the Federal Constitution, but held that the Kohler law was a proper and legitimate exercise of the state's police powers. This court directed a decree for the owners of the surface. The company appealed to the United States Supreme Court.

In handing down the opinion of the latter tribunal on the case Associate Justice Holmes said:

"The statute forbids the mining of anthracite coal in such a way as to cause the subsidence of, among other things, any structure used as a human habitation, with certain exceptions, including among them land where the surface is owned by the owner of the underlying coal and is distant more than 150 feet from any improved property belonging to any other other persons. As applied to this case, the statute is admitted to destroy previously existing rights of property and contract. The question is whether the police power can be stretched so far."

Some values, the court goes on to say, are enjoyed under an implied limitation, and must yield to the police power, but the implied limitation "must have its limits or the contract and due process clauses are gone.

"This is the case of a single private house," the opinion continues. "No doubt there is a public interest even in this, as there is in every purchase and sale and in all that happens within the Commonwealth. But usually in ordinary private

affairs the public interest does not warrant much of this kind of interference. A source of damage to such a house is not a public nuisance, even if similar damage is inflicted on others in different places. * * *

"The extent of the public interest is shown by the statute to be limited, since the statute ordinarily does not apply to land where the surface is owned by the owners of the coal. Furthermore, it is not justified as a protection of personal safety. That could be provided by notice. Indeed, the very foundation of this bill is that the defendant gave timely notice of its intent to mine under the house. On the other hand, the extent of taking is great.

"It purports to abolish what is recognized in Pennsylvania as an estate in land—a very valuable estate—and what is declared by the court below to be a contract hitherto binding the plaintiffs. If we were called upon to deal with the plaintiff's position alone, we should think it fair that the statute does not disclose a public interest sufficient to warrant so extensive a destruction of the defendant's constitutionally protected rights.

"But the case has been treated as one in which the general validity of the act should be discussed. The Attorney General of the State, the City of Scranton and the representatives of other extensive interests were allowed to take part in the agreement below, and I have submitted their contentions here. It seems, therefore, to be our duty to go further in the statement of our opinion in order that it may be known at once, and that further suits should be brought in vain.

Coal Valueless Unless Minable.

"It is our opinion that the act cannot be sustained as an exercise of the police power, so far as it affects the mining of coal under streets or cities in places where the right to mine such coal has been reserved. As said in a Pennsylvania case, 'for practical purposes the right to coal consists in the right to mine it.' What makes the right to mine coal valuable is that it can be exercised with profit. To make it commercially impracticable to mine certain coal has very nearly the same effect for constitutional purposes as appropriating or destroying it.

"It is true that in Plymouth Coal Co. v. Pennsylvania, it was held competent for the Legislature to require a pillar of coal to be left along the line of adjoining property; that, with the pillar on the other side of the line, would be a barrier sufficient for the safety of employes of either mine in case the other should be abandoned and allowed to fill with water. But that was a requirement for the safety of employes invited into the mine, and secured an average reciprocity of advantage that has been recognized as a justification of various laws.

"The rights of the public in a street purchased or laid out by eminent domain are those that it has paid for. If in any case its representatives have been so shortsighted as to acquire only surface rights, without the right of support, we see no more authority for supplying the latter without compensation than there was for taking the right of way in the first place, and refusing to pay for it because the public wanted it very much.

"The protection of private property in the Fifth Amendment pre-supposes that it is wanted for public use, but provides that it shall not be taken for such use without compensation. When this seemingly absolute protection is found to be qualified by the police power, the natural tendency of human nature is to extend the qualification more and more until at last private property disappears. But that cannot be accomplished in this way under the Constitution of the United States."

SUPREME COURT UPHOLDS ANTHRACITE TAX

Highest Federal Tribunal Decides that Law Is Constitutional—Tax Added to Circular Price of Hard Coal.

The Pennsylvania law imposing a tax of one and one-half per cent on the value of anthracite coal at the mines was held constitutional and valid in a unanimous decision handed down December 27, 1922, by the United States Supreme Court. No advance in quotations followed, as the producers fixed their prices high enough to cover the tax when mining was resumed in September.

So deep was the interest in this case that, although it was brought to the Supreme Court from Pennsylvania, the states of New York, New Jersey, Massachusetts, Maine, New Hampshire, Vermont, Rhode Island, Connecticut and Delaware joined in the fight against such a tax, holding that it would be unjust to the consuming public.

Two questions were presented. One whether Pennsylvania in taxing anthracite and not bituminous coal had not illegally discriminated in its classification, and the other whether it was not a tax upon interstate commerce. It was contended by those opposing the tax that, if sustained by the Supreme Court, wheat and corn producing states could tax such grains, the southern states cotton and manufacturing states could impose a tax on manufactured products.

Commodity Taxes Becoming Popular.

The tax in question, while comparatively a new method among states for raising revenue, apparently is growing in popularity and there is now pending in the Supreme Court a case involving the tax imposed by Minnesota upon iron ore mined within its borders.

Justice McKenna, who handed down the opinion, declared that both the contentions of the plaintiff in the suit, first, that the tax was discriminatory, because it differentiated between anthracite and bituminous, and, second, that it constituted a violation of interstate commerce, were erroneous. He upheld the action of the Supreme Court of Pennsylvania, which had dismissed a complaint by Roland G. Heisler, a stockholder of the Thomas Colliery Co., who sought to have the tax law passed by the Pennsylvania Legislature, May 11, 1921, declared unconstitutional and void.

This tax imposed upon each ton of anthracite coal mined, "washed or screened or otherwise prepared for market" a "tax of 1½ per cent of the value thereof, when prepared for market," the tax to be assessed at the time when the coal was subjected to the indicated preparation and "ready for shipment to market."

States Can Use Discretion.

Answering the contention that the tax violated the Fourteenth Amendment to the Constitution because by taking anthracite and not bituminous it denied equal protection of law to the colliery company, Justice McKenna said:

"In its exercise in taxation it is competent for a state to exempt certain kinds of property and tax others, the restraints upon it only being against 'clear and hostile discriminations against particular persons and classes.'

"The differences between anthracite and bituminous coal are a just basis for

their different classification, and the differences are great and important. They differ even as fuels. They differ fundamentally in other particulars. Anthracite coal has no substantial use beyond a fuel. Bituminous has other uses. Products of utility are obtained from it.

"There are, therefore, incentives to industry that the state in natural policy might well hesitate to obstruct or burden, and to yield to the policy or consider it is well within the concession of the power of the state expressed above. The distinction in the treatment of the respective coals being within the power conceded to the state, it has logical and legal justification and necessarily is not unreasonable or arbitrary."

In treating the argument that the law imposing the tax when the coal was "ready for shipment or market" violated the Interstate Commerce law, the Justice said:

"If the possibility or, indeed, certainty of exportation of a product or article from a state determines it to be interstate commerce before the commencement of its movement from the state, it would seem to follow that it is in such commerce from the instant of its growth or production, and in the case of coals, as they lie in the ground, the result would be curious."

"It would nationalize all industries. It would nationalize and withdraw from state jurisdiction and deliver to Federal commercial control the fruits of California and the South, the wheat of the West and its meats, the cotton of the South, the shoes of Massachusetts and the woolen industries of other states at the very inception of their production or growth; that is, the fruits unpicked, the cotton and wheat ungathered, hides and flesh of cattle yet 'on the hoof,' wool yet unshorn and coal yet unmined, because they are in varying percentages destined for and surely to be exported to states other than those of their production.

Exportation is not begun until the goods are given to the common carrier for transportation out of one state to another, or have started on their ultimate passage to that state, the court held. Until then, it was declared, they are a part of the general mass of property of the state and subject to its jurisdiction.

"A tax upon articles in one state that are destined for use in another state," Judge McKenna said, "cannot be called a regulation of interstate commerce, whether imposed in the certainty of a return from a monopoly existing or in the doubt and chances because of competition. The action of the state as a regulation of interstate commerce does not depend upon the degree of interference; it is illegal in any degree."

In 1913 the state of Pennsylvania imposed an ad valorem tax of 2½ per cent on anthracite mined, which was held unconstitutional by the state courts. In 1915 a similar tax was again imposed and was again held unconstitutional. In 1921 the Legislature enacted the present law, reducing the tax to 1½ per cent ad valorem, and the state courts upheld it as valid.

Strikes are not of recent origin. Tablets found in the ruins of Thebes show that 3,000 years ago a large number of workmen notified their employers they would discontinue work unless a new wage scale was arranged and back pay given them at the new rate.

WHY ANTHRACITE PRICES ARE HIGH

Summary of Overhead Costs and Operating Expenses which Result in Modest Profits to Operator.

When anyone connected with the producers of anthracite is asked to talk about "economic and business aspects" of the coal industry it does not require a great deal of imagination on his part to know that what his auditors want is an answer to the question "Why do I have to pay so much for coal?"

The public has a deep-seated conviction that the price of anthracite is too high. This belief is the real basis for the public demand for fact finding about coal that led to the passage of the law creating the United States Coal Commission. And the main fact that the public expects the commission to find, so far as anthracite is concerned, is that the public can and should get its domestic fuel supply at a lower price. Assuming as we may that this able commission will deal only with facts these are some of the things that it will necessarily find.

First, that anthracite production is different in every essential respect from bituminous coal production. There is no over-production of anthracite, there is no irregularity of production except that occasioned by the acts of the workers, and in spite of the public conviction to the contrary, the industry as a whole makes no excessive profits.

The production of anthracite is a costly and elaborate underground engineering proposition, and after the coal is brought to the surface from depths of from 500 to 1,500 feet, it is cleaned, washed and sized in huge breakers which cost today about $1,500,000.

Without going into the technical details of anthracite production, let us mention a few facts which indicate why it costs so much to produce hard coal.

Enormous Overhead Costs.

For every ton of coal produced, 11 tons of water must be pumped out of the workings. Beside the necessity for ridding the mines of some 800 million gallons of water a day, an operation requiring continuous pumping 365 days a year, it is necessary to hoist and dispose of about half a ton of rock and dirt for every ton of coal produced. Every minute of every day two tons of air are forced into the anthracite mines for ventilation. The timbering of the mines requires the use of 500 million board feet of timber every year, or about 7 feet for every ton of coal produced.

That anthracite mining is in reality a manufacturing proposition is shown by the fact that of the 150,000 men employed in the industry only about 42,000 are directly engaged in mining. The other 108,000 are employed in the handling and preparation of the coal for market.

These operations give a different picture from the conception of coal mining which imagines it to be merely the scooping out of easily accessible supplies and the loading of the coal on the cars for market.

But all of this, you will say, does not justify the price of $14 a ton for anthracite coal. It does not. But it is only a part of the story. In the first place the anthracite producer does not get $14 a ton, directly or indirectly. The coal for which the New York consumer pays $14 or more is sold at the mine at the

present time for about $8.25. But don't imagine all of the coal is sold at this price. About one-third of it is the so-called steam sizes which the mine owner is compelled to sell below the cost of production. In 1921-22 the average realization on the whole production was not more than $6.28 a gross ton.

Operators' Profits Not Over 40 Cents.

Let us look into the items that make up the mine price of anthracite. Labor costs $4.11; $1.05 goes for supplies; 58 cents for administration, making a total of $5.74. Subtract this from the amount realized on the whole production, $6.28, and there is 54 cents left, representing the average margin between production cost and mine price.

Out of this margin must come trade discounts and taxes, which reduced the average profit of the anthracite operator in the past two years to not more than 35 or 40 cents a ton.

In other words, if all of the profits made by all of the anthracite producers in 1921 and 1922 were eliminated, the price of coal could have been reduced by about 40 cents a ton.

The labor cost in this computation, which has back of it the authority of S. D. Warriner, based on a most careful investigation, was stated at $4.11. But obviously coal selling for $2 a ton, which is the average price of the steam sizes constituting about 30 per cent of the commercial production, could not carry a labor cost of $4. In other words, the larger domestic sizes must carry more than the average labor cost. According to Mr. Warriner's computation, a fair allocation of the labor cost would make this item $5.30 per ton in the case of stove coal.

It is going to be fairly easy to convince the Coal Commission, or for the Commission to convince itself, that the mine price of anthracite on the basis of present labor and other costs is fair, and that it cannot be reduced until these costs are reduced.

But what about the difference between the mine price of $8.25 for the domestic sizes and the price the consumer pays? This is made up of freight, —which in the case of New York is about $2.75 per ton, including litherage,—and also the costs and profits of retail distribution. The anthracite producer has nothing to do with his product, and derives no profit from it after it leaves the mine. Except for some legal details in the case of one or two companies, anthracite mining and railroad transportation are divorced industries, and whatever profit is made out of the transportation of anthracite goes to the railroad.

If railroad freight rates are too high, if dealers and distributors are adding too much to the mine price for their services, it is something for those interests to account for. The producer can only tell you what he gets for his product at the mine, what it costs him to produce it and the profit he makes out of it. There are some properties exceptionally favorably situated which realize more than the average profit I have stated, but there are many that average less, and there are others that make no profit at all. These facts, however unpalatable, and however different from the ideas commonly prevailing, are, nevertheless, facts which the searching investigation of the Fuel Commission may be expected to confirm.

Even the briefest discussion of economic aspects of the anthracite industry cannot ignore the labor problem, especially in view of the fact that it is labor

disturbance that has centered public attention upon the industry in recent months.

The labor cost of producing anthracite, according to the United States Bureau of Labor Statistics, has increased more than 138 per cent since 1914. Notwithstanding the fact that mine wages alone, among those paid by basic industries, have been increased instead of diminished since the end of the war, the miners presented to the anthracite operators early this year demands which would give them a further increase of wages, and add about $3 a ton to the cost of producing domestic anthracite.

There has never been a break for 20 years in the relations between anthracite producers and organized labor. There was no refusal this year on the part of the anthracite operators to negotiate with the miners' representatives. In fact we were committed to such negotiations and expected to proceed with them when, at the first meeting of the negotiators in March, we had presented to us a notice of suspension of mining on April 1st. Protests against the unreasonableness and unwisdom of this step were brushed aside and an anthracite strike was initiated which lasted for five months—possibly one of the most costly and at the same time most useless strikes that this country has ever had—and at the end of it the miners went back to work at their old wages.

Miners Refuse to Accept Deflation.

The basic rate of pay in the anthracite industry is 52½ cents an hour for common labor, all other wages grading up from this figure to levels which make the anthracite miner the aristocrat of the world's workers. You may recall that a month or so ago a great deal of attention was centered upon the fact that the Steel Corporation had increased wages 20 per cent, but with this increase the common labor rate in the steel industry was only raised to 36 cents an hour, while the anthracite industry pays 52½ cents.

Every other class of workers has accepted reductions from wartime wage peaks. Every other worker, therefore, is paying out of deflated wages the inflated wages of anthracite workers. By reason of the fact, as stated by President Harding, that the people of the United States are at the mercy of the United Mine Workers, the mine workers have been able up to this time to resist any adjustment of their wages corresponding to the adjustments that have taken place in all other industries.

Having done this, the miner is not very much impressed by the statement of economists that it could not be done. But as soon as urgent necessities are satisfied, the miner will find that he is going to pay dearly for his victory in the form of interrupted employment which will reduce his earnings.

The cost of labor alone is now more than the average selling price of anthracite at the mine before the war. The miner insists upon judging his wage, or the labor cost, of anthracite with relation to the retail price, whereas it can reasonably be judged solely with relation to the mine price. It is just about as reasonable to attempt to establish a ratio between the labor cost of anthracite and the New York retail price as it is to compare the labor cost of raising cattle with the price of a pair of shoes.

These are a few of the economic aspects of the anthracite coal problem. Every producer of anthracite will agree that the retail price is too high. He wishes that it could be lower because he is fearful that consumption will be reduced

by the high price, and he has not even the consolation of high immediate profits to compensate for this danger. He has an investment of about $8 per ton of annual production in a hazardous industry. A ten per cent return, which he ought to get on such an investment, would give him 80 cents a ton.

On the average he gets about half that. Nevertheless, he hears on all sides that he is a gouger. He remembers, however, that he was called the same names when coal sold at half its present price, and he wonders sometimes whether his position in industry is not similar to that of the mother-in-law in comic journalism—doomed to an unpopularity based upon tradition and unchangeable by evidence.

Address of Daniel T. Pierce, of the General Policies Committee of Anthracite Operators, before Women's City Club and the City Club of New York.

How Anthracite Cost Is Divided.

S. D. Warriner, chairman of the anthracite operators' general policies committee, has given out the following figures showing how the $13.30 paid by a domestic consumer in New York for a ton of stove coal is divided between those who produce, transport and deliver it at retail:

	Per Gross ton of 2,240 lbs.	Equivalent in net tons of 2,000 lbs.
Labor	$5.30	$4.73
Supplies	1.35	1.21
General expense	0.75	0.67
Total mine cost	$7.40	$6.61
Operator's margin as shown above is	0.70	0.62
Total f. o. b. mine price	$8.10	$7.23
Transportation to New York	2.61	2.33
Ferriage	0.50	0.50
Total cost to dealer	$11.21	$10.01
Dealer's cost of distribution, margin and profits		3.29
Retailer's price		$13 30

Allowances for Undersizing.

Information as to the sizing of anthracite steam coal is not easily obtainable, most of the producers proving uncommunicative when asked to state what their standard of preparation is as regards the permissible percentage of undersizing. There is a recognized standard to the extent that each size is supposed to pass through a screen with a certain mesh, and over a screen with a finer mesh, but there does not seem to be any generally accepted rule as to the amount of undersized coal which each size may legitimately contain.

One of the large independent operators has adopted the following standard:

Pea coal passes over ½-inch screen and 20 per cent undersize is allowed.

No. 1 buckwheat passes over ¼-inch screen and 15 per cent undersize is allowed.

No. 2 buckwheat passes over 3/16-inch screen and 25 per cent undersize is allowed.

No. 3 buckwheat passes over 1/16-inch screen and 15 per cent undersize is allowed.

THE ANTHRACITE INDUSTRY IN 1922

Aside from Five Months' Strike, Year Notable for Severe Drought and Supreme Court Decision Upholding Tonnage Tax.

In its review of the past year's developments the Anthracite Bureau of Information says in part:

The central fact of importance in the anthracite industry during the calendar year 1922 was the general strike. It was the first general tie-up in the anthracite mines since the great strike of 1902, and it lasted 163 days, or but one day less than its predecessor.

To the credit of both employers and mine workers, there was not the slightest disturbance of the peace during the shutdown that could be charged to bitterness of feeling engendered by the strike. Maintenance work was continued to such good effect that upon the resumption of mining, September 11th, mines were able to operate almost at normal efficiency.

Unlike most previous labor troubles in the anthracite region, the strike of 1922 was not based on a clear-cut issue concerning the anthracite industry. It was merely a part of a wider struggle based primarily upon issues applying only to the bituminous regions. To a very great degree, the anthracite strike resembled the strike of railway workers on July 1st; it was part of the strategy relied upon to bring about certain results in the bituminous fields.

On September 3rd at a meeting held in the office of Senator Pepper in Philadelphia, the agreement was reached:

Basis of Settlement.

To extend the old contracts and working conditions to August 31, 1923.

To have the union take all necessary steps to get the men back to work at once.

To have both sides united in recommending to Congress that legislation be enacted forwith creating a separate anthracite commission with authority to investigate and report promptly on every phase of the industry.

To continue production after August 31, 1923, upon such terms as the parties may agree to in the light of a report by such commission.

Within the week, union officers obtained a ratification of the agreement from the tri-district convention, and work was resumed in the mines September 11th.

Fuel Commission Appointed.

Governor Sproul, on August 8th, appointed a State Fuel Commission of seven members, headed by Chairman W. D. B. Ainey, of the Public Service Commission, to co-operate with the federal authorities in the distribution of coal. On September 7th, at a joint conference of Secretary Hoover and the Pennsylvania Fuel Commission, a Committee on the Distribution of Anthracite was named. This committee was headed by S. D. Warriner, chairman of the General Policies Committee of the Anthracite Operators, with E. W. Parker as Director of Distribution.

The State Fuel Commission and the Federal authorities were represented in the membership of this body, which promptly directed that each operator should distribute his tonnage in the normal way, seeing that each State should receive approximately its proper share of the available coal, based upon business done in

the coal year 1921-1922. Weekly reports of such distribution were made, facilitating the work of distributing available coal fairly.

Meanwhile, Federal Fuel Distributor Conrad E. Spens had accepted the duties tendered by President Harding, and from the time of taking his post worked in close conjunction with the Distribution Committee on anthracite matters.

Attempt at Price Regulation.

The question of mine prices arose early, and on September 20th Governor Sproul issued a proclamation based upon a decision of the Pennsylvania Fuel Commission. In it the governor said that the commission had fixed upon $8.50 per gross ton as a maximum mine price for stove and chestnut sizes, but that a Fair Practices Committee empowered by the commission would consider the cases of operators unable to sell at such maximum, and would recommend proper action. He also announced that retailers had agreed to keep their margins within the limits prevailing in March, 1922, and he bespoke the patience and co-operation of the public as essential to solution of the fuel problem.

The work of the Distribution Committee was based upon the principle that, as production during the coal year would be approximately 60 per cent of that in the previous coal year, distribution should be upon that basis to communities which received anthracite in the previous coal year, proper consideration being given to meeting immediate emergencies, and to caring for outlying points like the Northwest and northern New England, before weather conditions interfered with transportation. So far this idea has been applied successfully, the whole situation having been helped in no small degree by the mild weather prevailing all fall.

Water Scarcity.

The late summer and fall of 1922 were marked by one of the worst droughts in the history of the anthracite industry. By the opening of December many streams were down to unprecendentedly low levels, and both anthracite mines and the railroads serving them faced serious conditions due to lack of sufficient water for boiler purposes. In order to operate, it was necessary, in many cases, to haul fresh water long distances in tank cars, that colliery boilers might be supplied, this adding greatly to the difficulty and expense of keeping production up to approximately normal.

A disturbing feature of the year was the organized effort in Schuylkill and and Northumberland counties to impose vastly increased taxation on anthracite properties, under the regular triennial assessment of 1922. Final adjudication of these matters is still pending, but the determination of the issues raised is of prime importance, not only to the anthracite industry, but to every consumer of anthracite and to every owner of real property in the State of Pennsylvania.

State Tax Law Upheld.

Additional burdens upon the consumers of anthracite, within and without the State of Pennsylvania, were made certain when the United States Supreme Court, in a decision given the last week in November, upheld the Pennsylvania anthracite tonnage act of 1921. This act fixes a tax of 1½ per cent of the market value of coal at the mine, when prepared for market. It became effective July 1, 1921, and the estimated amount of tax due by the end of 1921 was $3,273,840.61. State authorities estimate that this tax should yield from $6,500,000 to $7,000,000 annu-

ally as a regular thing, which is another way of saying that they expect to get taxes amounting to a levy of about 15 cents on each ton of domestic fuel produced by the anthracite mines.

This tonnage tax was tested out in a stockholder's case against the Thomas Colliery Company and the State authorities, brought in the Dauphin County Court at Harrisburg. The decision upheld the tax, and on appeal the Pennsylvania Supreme Court, which several years ago set aside a law practically identical in its provisions, confirmed this decision. The United States Supreme Court, which heard the case on appeal of the original complainant, with the legal representatives of anthracite-consuming states as intervenors, sustained the State Supreme Court, and upheld the distinction between anthracite and bituminous coal as a legitimate one for tax purposes.

There still remain several appeals against the tonnage tax act, relating to questions not involved in the action which went up to the United States Supreme Court, but to matters regarding the assessment of the tax and the methods used.

The Pennsylvania Supreme Court also upheld the Kohler mine cave act, with which the Fowler act is inseparably linked. The Kohler act gave wide discretionary powers to mayors and other municipal officers over the mining of anthracite within municipal limits, and make it a criminal offense to conduct mining operations which result in injury to surface property or to individuals on the surface.

The companion act, known as the Fowler act, created a fund for the repair of surface damage due to mining, the coal companies accepting the act to pay regularly into the fund and to be relieved of actions for monetary damage. This act was not accepted by coal operators, and the provisions of the Kohler act were deemed so strict that a number of mines in the Scranton district were closed for nearly a year, the owners declining to take chances by operating.

An appeal to the United States Supreme Court from the Pennsylvania Supreme Court's position on this act was taken on behalf of coal right owners, and decision in this case, handed down on December 11, was to the effect that the act is unconstitutional.

Extent of Tonnage Loss.

The strike, lasting from the first of April until September 11th, cut heavily into anthracite shipments, causing a loss of approximately 30,000,000 tons as compared with the corresponding period in the year preceding.

By October, however, the mines were getting back into their swing. Labor supply in October was substantially the same as in the month preceding the strike, and both men and equipment worked so efficiently that the October shipments were more than 12 per cent greater than in October, 1921.

But even gains of this character, however gratifying and helpful in relieving acute demand for fuel, are insufficient to overcome the tremendous handicap imposed by more than five months' idleness. Both the calendar year 1922, and the coal year ending March 31, 1923, are bound to show marked decreases in shipments.

In order to furnish power for its Lucerne mines in southern Indiana County, Pennsylvania, the Rochester & Pittsburgh Coal & Iron Co. is preparing to change the course of Cherry Run and build a dam 200 feet wide, so as to form a pond three-quarters of a mile long. The work will be done by July and will cost $100,000.

CERTIFICATE LAW VICIOUS

Enables U. M. W. to Dominate Anthracite Industry and Should Be Repealed.

The anthracite industry must always be largely under the domination of the United Mine Workers of America so long as the so-called certificate law remains on the statute books of Pennsylvania.

This law, Act No. 225 of the General Assembly of 1897, entitled "An act to protect the lives and limbs of miners from the dangers resulting from incompetent miners working in the anthracite coal mines of this Commonwealth," etc., provides for a "Miners' Examining Board," in each of the eight anthracite districts (since increased to 25), consisting of nine miners named from among the most skilful miners actually engaged in that work in each district.

To this board is given the power of issuing certificates of competency which all anthracite miners must have to entitle them to be employed.

To obtain these certificates they must be able to answer the questions of the Examining Board and at the same time produce satisfactory evidence of having had *"not less than two years' experience as a miner, or as a mine laborer in the mines of this Commonwealth."*

Granting the miners' certificates is entirely in the hands of the union, for the field is solidly organized now and it is impossible to get "skilful miners" for the board who are not members of the union.

Likewise, miners who have had experience in other mining operations may not be brought in at time of industrial troubles or when, as at present, it is desirable to speed up production in every way possible, simply because it is necessary that they have had two years' experience in a Pennsylvania mine.

Useless as a Safety Measure.

The law is archaic and should be repealed. It is no longer a safety measure but solely a union measure. It was enacted at a time when such legislation was deemed necessary to safeguard the workers.

Employers are now vitally interested in the protection of the lives and limbs of their employes, and the safeguarding of their property; their own successful conduct of their business requires it. On this account they employ safety engineers and annually spends thousands of dollars for safety purposes.

In the meanwhile, the law is being used to perpetuate the union oligarchy in the anthracite fields. It is only the mines in these fields which have no non-union competition, regarded in modern-day economics as a healthy and desirable state of affairs.

Repeal of the law will not mean any let-down in safety of operations, but will give operators a possible chance of bringing in men from other regions in case of another prolonged anthracite tie-up.

The American Super-Power Corporation, organized to develop the hydro-electric possibilities of the St. Lawrence River, has applied to the Federal Water Power Commission for a preliminary permit to construct two water power dams in the river, one near Waddington and the second near Massena, N. Y. Combined capacity of the two projects is estimated at 1,350,000 horsepower.

OLD TIME MINERS' WAGES

In Former Years Anthracite Workers Were Paid on Sliding Scale Arrangement Based on Selling Price.

The present rate of wages in the anthracite region suggests some comparisons with those of a generation ago. In 1879 miners' wages in the Lehigh regions were on a sliding scale, based on the price of coal at tidewater in New York harbor. The basic price was $5.00.

When coal was selling at that figure miners working on a tonnage basis were paid 87.1 cents a car, and those working by the day received $12.60 a week. First class miners' laborers were paid $10.80, and second class laborers $9.90 a week. For every ten-cent variation in the average price of coal at tidewater wages were readjusted according to the following scale:

Price	Car Rate	Miners' Wages	Laborers' Wages	Price	Car Rate	Miners' Wages	Laborers' Wages
$5.00	87.1c	$12.60	$10.80	$3.90	77.5c	$11.21	$9.61
4.90	86.2c	12.47	10.69	3.80	76.6c	11.09	9.50
4.80	85.3c	12.35	10.58	3.70	75.7c	10.96	9.39
4.70	84.5c	12.22	10.47	3.60	74.9c	10.83	9.29
4.60	83.6c	12.10	10.36	3.60	74.9c	10.83	9.29
4.50	82.7c	11.97	10.26	3.50	74.0c	10.71	9.18
4.40	81.9c	11.84	10.15	3.40	73.1c	10.58	9.07
4.30	81.0c	11.72	10.04	3.30	72.3c	10.45	8.96
4.20	80.1c	11.59	9.93	3.20	71.4c	10.33	8.85
4.10	79.2c	11.46	9.82	3.10	70.5c	10.20	8.74
4.00	78.3c	11.34	9.72	3.00	69.6c	10.08	8.64

Other classes of work was paid for as follows: Driving gangways, $6.12 per yard for timbered and $5.35 not timbered. Driving chutes, $2,87 per yard; cross-cuts, $1.91 per yard. Cross holes from gangways to airway, $3.85 per yard. Air-way, 25 square feet, per yard $3.25; outside labor, first class, $9.60 per week; second-class, $9.00; third-class, $8.00. On contract, mammoth vein coal, per ton, 48 cubic feet, 42½ cents.

During much of the period of the sliding scale, $4 at tidewater was regarded as a substantial, or even a high price. It corresponded roughly to $2.50 at Schuylkill Haven, and as the following paragraph shows, the average price at Schuylkill Haven during 1879 was $1.75½.

Wages in the Schuylkill Region.

Wages in the Schuylkill region in 1879, were based upon the average price of coal at Schuylkill Haven, obtained monthly. The basis was $2.50 and wages rose or fell as the price of coal was above or below this rate at point named. During 1879 the average price was $1.75½ per ton, and wages paid for the year were at an average of 24¾ per cent below the basic price. The Reading paid on the rate of tolls received for carrying coal, so that the average rate of wages paid by that company was 15⅓ per cent below the basis.

At $2.50, miners employed by the day made from $11.70 to $15.00 per week.

At $2.50, outside men are paid $9.00 to $10.00 per week. (*Continued*)

Wages in Wyoming Region.

In the Wyoming region miners were paid 80 cents per car for cutting coal when the price was $3.00 per ton at tidewater. Inside men were paid $1.59 per day for the highest class. Some were rated less, according to ability. Outside men received $1.25 per day.

The miner had to pay a laborer out of his rate per car and find powder, oil and other supplies. Rates advanced 10 per cent for every dollar per ton increase in the price of coal.

The sliding scale arrangement was continued in the Schuylkill region until the time of the Big Strike in 1902.

Men Employed, Days Worked, Pennsylvania Anthracite Region, 1921.

We give below data showing men employed and days worked in the anthracite fields in the year 1921 as reported by operators through official channels.

	Average Number of Men Employed					Average
		Underground				
	Surface	Miners, Etc. (a)	Other	Total Underground	Total	Number of Days Worked
LEHIGH:						
Freshly mined coal	6,738	7,732	6,154	13,886	20,624	270
Washery product	96	....	....	....	96	224
Dredge product	7	....	....	....	7	155
	6,841	7,732	6,154	13,886	20,727	270
SCHUYLKILL:						
Freshly mined coal 15,566		21,341	11,819	33,160	48,726	278
Washery product	744	....	....	....	744	86
Dredge product	291	....	....	....	291	180
	16,601	21,341	11,819	33,160	49,761	274
WYOMING:						
Freshly mined coal 18,413		44,484	24,813	69,297	87,710	270
Washery product	515	....	....	....	515	144
Dredge product	15	....	....	....	15	120
	18,943	44,484	24,813	69,297	88,240	269
SULLIVAN COUNTY:						
Freshly mined coal	297	420	54	474	771	206
Total freshly mined coal...41,014		73,977	42,840	116,817	157,831	272
Total washery product (b)	1,355	....	....	....	1,355	118
Total dredge product	313	....	....	....	313	176
GRAND TOTAL 42,682		73,977	42,840	116,817	159,499	271

(a) Operators were requested to give number of "all miners (contract, consideration and company) and their laborers."

(b) Certain producers reporting a production of about one-sixth of the total washery coal were unable to seperate the men employed in their washeries from their breaker employees. These washery employees are therefore included in the breaker employees.

The Northern Pacific Railroad is planning to build a 35-mile spur south from Forsyth, Mont., to reach an undeveloped coal field. Mines will be opened by the company to supplement its present fuel supply, which on that part of the system comes chiefly from the State of Washington.

Anthracite Shipments by Railroad Routes.

Shipments over the lines of the anthracite coal carriers in the year 1922 and four years previous in gross tons were as follows:

Comparison	1918	1919	1920†	1921	1922
Philadelphia & Reading.	14,837,395	12,289,893	14,078,324	13,696,789	8,263,106
Lehigh Valley	14,287,325	12,003,687	12,500,839	11,956,688	7,178,902
Jersey Central	7,245,276	5,941,412	5,459,948	5,424,785	3,854,672
Del., Lack. & Western.	11,884,669	10,299,834	9,891,780	10,513,778	5,880,117
Delaware & Hudson...	8,914,684	8,087,362	9,670,402	8,264,499	5,271,174
Pennsylvania	5,518,204	4,801,453	5,519,042	4,881,114	3,327,036
Erie	8,641,582	7,311,009	6,461,400	7,069,862	4,257,180
N. Y., Ont. & Western.	2,033,388	1,882,601	2,014,654	1,604,425	1,028,590
Lehigh & New England	*3,812,753	3,232,450	3,238,468	2,809,006	1,754,615
Total.....	76,649,918	66,855,462	68,915,460	67,617,713	40,815,772

*Total does not include tonnage shipped over the L. & N. E. R. R. Reported by both L. & N. E. and C. R. R. of N. J. 475,300 tons in 1918. †March tonnage estimated.

What of 1942?

As time goes on many points of similarity are noted in connection with the comparison that is inevitably made with the great strike of 1902, or points showing a difference in conditions are noted. Sometimes the events of twenty years seem close at hand as certain familiar features recur to our mind, while on the other hand other less familiar topics are recalled as though from another world.

After all, twenty years is quite a stretch and few of those among us who were prominently in touch with affairs in 1902, will be on deck when another twenty-year period has rolled around. In the "lean and slippered pantaloon stage" referred to by Shakespeare some survivors will observe the course of events, but we surmise that few will be active in business, for forty years of time involve a wonderful degree of elimination in business circles.

Tonnage Handled at South Amboy.

It has often been said that the Pennsylvania R.R. piers at South Amboy, N. J., handle more coal than any other loading port in New York harbor. We give below a tabulation showing the operations in gross tons over a term of years:

Year.	Bituminous.	Anthracite.	Total.	Coke Net.
1912.....	3,562,810	888,239	4,451,049	10,297
1913.....	4,291,953	1,160,656	5,452,609	11,800
1914.....	3,657,520	1,466,773	5,124,293	13,815
1915.....	4,158,938	1,111,125	5,270,063	16,338
1916.....	4,197,494	1,022,054	5,219,548	16,048
1917.....	4,113,570	757,515	4,871,085	5,858
1918.....	4,838,028	600,340	5,438,368	364
1919.....	3,393,754	569,445	3,963,199	1,597
1920.....	4,618,178	715,135	5,333,310	.....
1921.....	3,533,172	589,689	4,122,861	.....
1922.....	2,102,552	569,910	2,672,462	.....

Pennsylvania Anthracite.

The anthracite coal fields of Pennsylvania are located in the easterly portion of the State, chiefly in Lackawanna, Luzerne, Carbon, Columbia, Northumberland and Schuylkill Counties. The fields are divided into four sections geologically: the Northern, the Eastern Middle, the Western Middle and the Southern. They are divided into three great trade regions: the Wyoming in the north, the Lehigh in the central portion and the Schuylkill in the southerly portion of the territory. These regions are in turn divided into 17 mining districts as follows:

Carbondale	Plymouth	Beaver Meadow	Panther Creek
Scranton	Green Mountain	East Mahanoy	East Schuylkill
Pittston	Black Creek	West Mahanoy	West Schuylkill
Wilkes-Barre	Hazelton	Shamokin	Lorberry
		Lykens Valley	

While the coal fields are of very limited extent compared with the great bituminous deposits of Pennsylvania, to say nothing of the coal deposits of the country in general, they are of great value not only by reason of the quality of the coal contained therein, but by reason of their proximity to the great centers of population where this particular fuel is most acceptable and serviceable.

The anthracite coal fields having been developed first 100 years ago, having been explored in minute detail and having been developed and operated by many important interests, have been described so often that they have, in fact, produced one might say, a literature of their own. Particularly exhaustive have been the facts brought forth by various investigations and inquiries of past years under the authority of Congress, executive departments and boards, the Legislatures of Pennsylvania and New York and other public bodies.

Probably no fact stands out more prominently now in view of the records of past years than the important feature that hard coal was furnished to the public at a very low cost during a long term of years, as the duly authorized selling prices of the recent past plainly demonstrate.

Statistics of production are available from 1807, but the customary amount referred to in the trade as the initial shipments is 365 gross tons in 1820. From that time on rapid progress was made despite many vicissitudes, the industry forging ahead more rapidly than coal mining advanced in other sections. It passed the 100,000 mark in 1829; the million mark in 1837, and the two million mark in 1844. Prior to this time the production of anthracite was practically the only mining carried on in a large way aside from the activities in Virginia. In 1850 the production exceeded 4,000,000 tons; in 1860, 8,000,000 tons; in 1870, 15,000,000 tons; in 1880, 28,000,000 tons, thus, it will be seen, nearly doubling every ten years. From that time on the growth was slower. In 1890 the output was 46,000,000 tons; in 1900, 57,000,000 tons; in 1910, 84,000,000 tons, and in 1920, 88,000,000 tons.

Anthracite Production by Districts.

District	1920	1921	1922	District	1920	1921	1922
I	2,494,352	2,435,441	1,516,672	XIV	4,258,271	4,306,067	2,362,011
II	3,344,101	3,221,669	1,965,624	XV	3,189,547	3,803,080	2,362,011
III ...	2,906,028	2,845,977	1,664,655	XVI	3,189,547	3,121,035	1,799,645
IV ...	1,907,323	2,066,322	1,191,043	XVII	3,817,895	3,251,922	2,101,718
V	2,353,740	2,056,299	865,808	XVIII ...	3,820,065	3,430,658	2,359,184
VI ...	3,605,100	4,032,792	2,172,996	XIX	2,452,088	2,479,992	1,708,650
VII ..	2,570,599	2,399,937	1,595,943	XX	3,107,009	2,921,394	1,833,075
VIII .	3,230,363	3,666,462	2,806,957	XXI	3,967,280	3,988,497	2,539,482
IX ...	2,687,186	2,683,120	1,618,963	XXII	3,963,906	4,009,466	1,898,927
X	3,178,179	3,242,035	1,870,147	XXIII ...	2,613,536	2,780,185	1,976,238
XI ...	2,991,954	3,709,926	1,892,958	XXIV ...	2,510,165	2,545,508	1,741,655
XII ..	3,848,181	4,560,668	2,265,521	XXV	2,379,554	2,335,106	1,549,404
XIII .	4,213,669	4,718,503	2,505,169	Total gr.	75,410,091	79,012,261	46,880,126
				Total, net.	84,459,301	88,493,732	52,505,741

FIRST

Company	Address	1920	1921	1922
Hudson Coal Co.	Scranton	412,678	554,673	292,765
Hillside C. & I. Co.	Scranton	404,353	431,215	251,248
Temple Coal Co.	Scranton	270,846	110,048	77,994
Lackawanna Coal Co.	Scranton	.....	247,100	164,187
Connell Anth. Mining Coal Co.	Scranton	226,731	238,216	122,591
Scranton Coal Co.	Scranton	191,700	232,480	147,595
Mt. Jessup Coal Co., Ltd.	Peckville	275,971	285,848	163,547
Northern Anth. Coal Co.	Lopez	209,209	109,792	77,697
Robertson Coal Co.	Scranton	176,623	37,877	25,082
Racket Brook Coal Co.	Carbondale	152,089	104,823	89,025
Barton Coal Co.	Scranton	72,615	20,608	34,908
Carbondale CM Co.	Carbondale	18,662	25,561	14,068
Grove Hill Coal Co.	Peckville	19,260	9,310	16,515
Clifford Coal Co.		.....	.....	12,527
Richmondale Coal Co.	Scranton	.....	17,036	12,944
Blakley Red Ash Coal Co.		.....	.....	4,800
Murray B. Coal Co.		.....	.....	4,794
Hillside C. & Supply Co.		.....	.....	2,365
Superior Anth. Coal Co.	Carbondale	.....	.....	2,020
Total		2,494,352	2,435,441	1,516,672

SECOND

Hudson Coal Co.	Scranton	2,331,361	2,307,949	1,237,875
Scranton Coal Co.	Scranton	375,491	326,149	200,980
Temple Coal Co.	Scranton	284,376	246,555	158,312
Rhondda Coal Co.	Scranton	126,616	37,905	71,897
Archbald Coal Co.	Wilkes-Barre	114,537	57,919	84,803
Hillside C. & I. Co.	Scranton	61,541	123,646	78,847
Humbert Coal Co.	Scranton	22,131	101,181	70,535
Murrin Coal Co.	Scranton	23,526	15,825	34,995
Johnson Coal Co.		.....	.....	13,913

Company	Address	1920	1921	1922
Rose Coal Co		.....	.....	6,680
Amerman Coal Co		.....	.....	5,600
Lackawanna CM. Co		.....	.....	1,187
Total		3,341,101	3,221,669	1,965,624
	THIRD			
Hudson Coal Co	Scranton	1,304,612	1,253,833	761,005
Glen Alden Coal Co	Scranton	779,054	894,992	468,829
Legitts Creek Anthracite Co.	Scranton	.....	357,438	217,350
Von Storch Collieries Co	Scranton	438,798	262,039	132,730
Mid City Coal Co	Scranton	71,139	70,559	47,561
Pleasant Mt. Coal Co	Scranton	63,406	7,116	47,561
Warren T. Acker & Others	Scranton	.....	.....	23,471
H. P. Decker Coal Co	Scranton	.....	.....	13,709
Total		2,906,028	2,845,977	1,664,655
	FOURTH			
Scranton Coal Co	Scranton	595,903	610,391	369,071
Glen Alden Coal Co	Scranton	357,599	297,027	82,681
Price-Pancoast Coal Co	Scranton	346,542	294,195	210,404
Pennsylvania Coal Co	Scranton	237,022	282,771	185,432
Hudson Coal Co	Scranton	172,777	384,498	188,442
Lackawanna Fuel Co	Scranton	94,991	58,074	71,120
Green Ridge Coal Co	Scranton	50,609	42,853	25,378
Se Rob Coal Co	Scranton	25,280	91,146	56,474
Petersburg Coal Co	Scranton	7,887	2,555	2,041
Total		1,907,323	2,066,322	1,191,043
	FIFTH			
Glen Alden Coal Co.*	Scranton	1,761,105	1,473,329	476,055
Hudson Coal Co	Scranton	415,999	513,635	256,848
Scranton Anth. Coal Co	Scranton	82,438	15,000	20,299
W. Y. Moffat	Dunmore	40,465	33,225	24,428
Gibbons Coal Co	Scranton	35,887	21,060	51,723
Black Diamond Coal Co	Scranton	17,846	50	15,732
Park Hill Coal Co	Scranton	.....	.....	5,769
Powell & Jennings Coal Co	Scranton	.....	.....	3,600
Slocum Hollow Coal Co	Scranton	.....	.....	12,354
Total		2,353,740	2,056,299	865,808
	SIXTH			
Pennsylvania Coal Co	Dunmore	1,267,847	1,542,895	938,490
Glen Alden Coal Co	Scranton	792,947	939,870	475,897
Hudson Coal Co	Scranton	773,461	954,832	420,516
Scranton Coal Co	Scranton	266,582	232,529	116,772
Quinn Coal Co	Scranton	119,837	7,761	78,236
Mt. Jessup Coal Co	Mt. Jessup	164,047	151,889	16,163
Nay Aug Coal Co	Carbondale	60,671	38,073	24,109
Spencer Coal Co	Dunmore	62,292	57,869	52,451
Bald Mountain Coal Co	Scranton	50,871	66,804	17,703

Company	Address	1920	1921	1922
Carney & Brown Coal Co.	Dunmore	30,671	21,304	11,872
John J. Boland Coal Co.	Scranton	8,333	8,737	8,130
Scranton Anth. Coal Co.	Scranton	7,541	10,229	12,657
Total		3,605,100	4,032,793	2,172,996
SEVENTH				
Glen Alden Coal Co.	Scranton	1,150,257	1,344,629	744,308
Pennsylvania Coal Co.	Scranton	655,919	744,950	409,257
Hillside C. & I. Co.	Scranton	111,367	125,097	54,909
Suffolk Coal Co.	Scranton	227,321	135,463	143,927
Jermyn & Co.	Scranton	344,246	59,803	200,997
Dennington Coal Co.	Scranton	.....	.....	23,734
Reap-Murphy Coal Co.	Scranton	.....	.....	18,811
Total		2,570,599	2,399,937	1,595,943
EIGHTH				
Pennsylvania Coal Co.	Scranton	2,313,458	2,665,153	1,515,506
Hillside C. & I. Co.	Scranton	648,449	677,685	344,781
Hudson Coal Co.	Scranton	242,143	315,436	146,130
Total		3,230,363	3,666,462	2,006,957
NINTH				
Lehigh Valley Coal Co.	New York	1,862,525	1,626,392	943,062
Temple Coal Co.	Scranton	471,805	493,323	347,701
Kingston Coal Co.	Kingston	345,552	338,332	182,018
Mt. Lookout Coal Co.	Scranton	211,535	164,130	100,686
John Anse Coal Co.	Duryea	53,252	7,425	10,817
Healy Coal Co.	Plains	17,196	21,344	2,109
Harris-Denly Coal Co.	Cleveland, O.	.....	29,291	21,738
John-Fib Coal Co.	Wyoming	.....	3,127	10,832
Total		2,687,166	2,683,320	1,618,963
TENTH				
Hudson Coal Co.	Scranton	1,022,975	1,025,998	485,201
Glen Alden Coal Co.	Scranton	578,198	679,866	356,590
Conlon Coal Co.	Scranton	66,009	59,992	37,490
Lehigh Valley Coal Co.	Wilkes-Barre	695,337	772,052	473,774
Central Coal Co.	Parsons	67,026	68,159	36,869
Haddock Mining Co.	Dorrancetown	170,638	160,914	111,632
Wilkes-Barre Colliery Co.	Frackville	142,463	170,449	98,706
Traders Coal Co.	Scranton	154,059	56,849	88,288
Raub Coal Co.	Luzerne	87,499	65,886	49,285
Healy Coal Co.	Hudson	29,860	27,338	11,315
East Boston Coal Co.	Kingston	164,115	154,532	121,007
Total		3,178,179	3,242,035	1,870,147
ELEVENTH				
Lehigh & Wilkes-B. Coal Co.	Wilkes-Barre	1,170,156	1,665,970	874,241
Lehigh Valley Coal Co.	Wilkes-Barre	913,694	931,789	536,683
Hudson Coal Co.	Scranton	737,549	962,725	420,272

Company	Address	1920	1921	1922
Red Ash Coal Co.	Wilkes-Barre	107,253	54,809	31,691
Hillman Coal Co.	Wilkes-Barre	63,302	94,633	30,071
Total		2,991,954	3,709,926	1,892,958
	TWELFTH			
Hudson Coal Co.	Scranton	1,432,608	1,657,148	684,066
Glen Alden Coal Co.	Scranton	1,066,937	1,266,919	668,716
Lehigh & Wilkes-B. Coal Co.	Wilkes-Barre	806,375	1,110,099	628,059
Kingston Coal Co.	Kingston	518,601	511,088	261,606
Plymouth Red Ash Coal Co.	Plymouth	13,880	17,361	11,759
Inter City Fuel Co.	Plymouth	9,780	8,052	4,315
Total		3,848,181	4,560,668	2,265,521
	THIRTEENTH			
Glen Alden Coal Co.	Scranton	*2,351,291	2,657,312	1,318,648
Lehigh & W.-B. Coal Co.	Wilkes-Barre	1,005,685	1,284,939	773,883
Lehigh Valley Coal Co.	Wilkes-Barre	469,543	510,800	259,798
Pittston CM. Co.	Pittston	145,267	134,445	83,882
George F. Lee Coal Co.	Wilkes-Barre	114,483	98,285	22,944
West Nanticoke Coal Co.	Philadelphia	122,600	32,721	46,013
Total		4,213,669	4,718,503	2,505,169
	FOURTEENTH			
Susquehanna Collieries Co.	Wilkes-Barre	1,391,247	1,587,781	952,220
Glen Alden Coal Co.	Scranton	864,907	977,771	519,652
Lehigh & W.-Barre Coal Co.	Wilkes-Barre	682,604	805,435	520,292
West End Coal Co.	Mocanaqua	542,039	520,311	339,047
Alden Coal Co.	Alden Station	403,275	337,485	227,882
E. S. Stackhouse Coal Co.	Shickshinny	75,349	39,846	49,529
East Alden Mining Co.	Wilkes-Barre	45,552	37,438	20,033
Nanticoke Valley Coal Co.	Nanticoke	.....	.....	30,034
Total		4,258,271	4,306,067	2,658,689
	FIFTEENTH			
Jeddo Highland Coal Co.	Jeddo	1,247,133	1,128,014	832,636
Coxe Bros. & Co., Inc.	Wilkes-Barre	1,078,207	1,150,486	606,517
Lehigh Valley Coal Co.	Wilkes-Barre	565,477	600,468	362,748
Pardee Bros. Co., Inc.	Lattimer	668,823	574,804	353,674
Upper Lehigh Coal Co.	Hazleton	186,005	145,122	93,183
Hazle Brook Coal Co.*	Hazleton	106,083	118,762	55,369
East Point Coal Co.	Scranton	50,750	14,453	13,672
M. S. Kemmerer & Co.	Sandy Run	36,495	70,071	44,212
Total		3,982,548	3,803,080	2,362,011

* Wentz Co. in 1920 and 1921.

	SIXTEENTH			
Cranberry Creek Coal Co.	West Hazleton	872,446	903,336	490,467
Coxe Bros. & Co., Inc.	Wilkes-Barre	629,246	634,575	296,314
Lehigh & Wilkes-Barre C. Co.	Wilkes-Barre	593,805	659,660	391,070
C. M. Dodson Coal Co.	Bethlehem	337,993	271,597	176,354
Van Wickle Estate	Hazleton	177,153	171,622	129,081
Harwood Coal Co.	West Hazleton	126,576	401,977	210,681

Company	Address	1920	1921	1922
Evans Colliery Co	Beaver Meadow	54,723	36,268	46,948
Beaver Valley Coal Co	Baltimore, Md	38,302	41,800	40,341
Candlemas Coal Co	Jeddo	.....	.....	16,469
Total		3,189,547	3,121,035	1,799,645
SEVENTEENTH				
Lehigh Coal & Navigation Co	Lansford	2,101,718	2,802,609	2,101,718
EIGHTEENTH				
Phila. & Reading C. & I. Co	Pottsville	1,756,046	1,460,861	1,013,754
Lehigh Coal & Navigation Co.	Lansford	474,596	426,054	258,228
Lehigh Valley Coal Co	Wilkes-Barre	340,656	404,759	231,909
Mill Creek Coal Co	New Boston	295,399	259,960	175,072
Maryd Coal Co	Maryd	222,345	277,091	174,835
St. Clair Coal Co	St. Clair	268,168	265,811	225,696
Alliance CM Co	Philadelphia	247,233	174,554	146,238
Schulykill Valley Coal Co	Pottsville	.....	28,802	31,602
Thouron Coal Co	Avoca	.....	13,544	27,743
Gorman & Campion Coal Co.	Tuscarora	52,827	52,177	32,769
Bergen Coal Co	Pottsville	26,005	25,246	11,293
Total		2,820,065	3,430,658	2,359,184
NINETEENTH				
Phila. & Reading C. & I. Co	Pottsville	1,166,979	1,115,596	669,690
Lytle Coal Co	Wilkes-Barre	348,568	304,802	216,095
Buck Run Coal Co	Minersville	216,659	278,673	192,354
York Farm Coal Co		.....	29,794	104,207
Gardner Coal Co		.....	15,312	39,036
Cullen Fuel Co	New York	53,483	9,912	14,303
Sherman Coal Co	Pottsville	24,334	23,148	38,563
Black Heath Coal Co	Minersville	10,100	8,825	6,055
Butcher Creek Coal Co	St. Clair	5,043	10,892	10,700
Pine Hill Coal Co	Scranton	248,049	278,673	298,676
Repplier Coal Co	Minersville	.....	.....	118,971
Total		2,452,008	2,479,992	1,708,650
TWENTIETH				
Phila. & Reading C. & O. Co	Pottsville	2,552,611	2,383,126	1,545,826
Lehigh Valley Coal Co	Wilkes-Barre	554,398	538,268	287,250
Total		3,107,009	2,921,394	1,833,075
TWENTY-FIRST				
Phila. & Reading C. & I. Co	Pottsville	1,742,976	1,573,052	838,385
Lehigh Valley Coal Co	Wilkes-Barre	1,111,966	1,192,346	652,945
Locust Mt. Coal Co	Bethlehem	578,123	589,256	445,836
Susquehanna Collieries Co	Wilkes-Barre	268,304	239,811	144,744
Thomas Colliery Co	Shenandoah	173,926	236,490	351,972
Raven Run Coal Co	Raven Run	109,472	146,509	105,600
Total		3,967,280	3,988,497	2,539,482

TWENTY-SECOND

Company	Address	1920	1921	1922
Phila. & Reading C. & I. Co.	Pottsville	1,985,448	1,998,731	800,667
Lehigh Valley Coal Co.	Wilkes-Barre	919,148	978,668	428,216
Harleigh-Brookwood Co.	Pottsville	416,379	383,695	234,000
Midvalley Coal Co.	Wilburton	235,922	364,536	147,118
East Bear Ridge Coal Co.	Mahanoy City	242,376	262,210	163,395
Girardville Coal Co.	Hazleton	.....	.....	76,368
Laurel C. M. Co.	Mowry	42,716	21,626	19,163
Total		3,953,906	4,009,466	1,898,927

TWENTY-THIRD

Susquehanna Collieries Co.	Wilkes-Barre	1,149,642	1,112,859	692,560
Phila. & Reading C. & I. Co.	Pottsville	553,783	635,000	797,975
Colonial Colliery Co.	Frackville	283,060	333,620	225,767
Greenough Red Ash Coal Co.	Shamokin	213,323	228,841	139,929
Excelsior Coal Co.	Shamokin	193,000	202,600	120,000
Shamokin Red Ash C. Co.	Shamokin	70,576	65,778	53,470
Total		2,613,536	2,779,185	1,976,230

TWENTY-FOURTH

Phila. & Reading C. & L. Co.	Pottsville	1,583,998	1,647,344	945,894
Susquehanna Collieries Co.	Shamokin	486,659	486,227	347,505
Buck Ridge C. M. Co.	Shamokin	170,382	178,330	102,526
Trevorton Colliery Co.	Shamokin	138,457	131,145	84,544
Shipman Koal Co.	Shamokin	128,614	102,462	96,431
Enterprise Coal Co.	Scranton	.....	.....	163,705
Superior Anth. Coal Co.	Carbondale	.....	.....	1,050
Total		2,510,165	2,545,508	1,741,655

TWENTY-FIFTH

Phila. & Reading C. & I. Co.	Pottsville	1,573,299	1,521,226	936,546
Susquehanna Collieries Co.	Wilkes-Barre	806,255	813,880	612,858
Total		2,382,255	2,335,106	1,549,404

In connection with data relative to locomotive fuel tonnages, as officially reported, it may be well to bear in mind that railroad companies use a considerable amount of coal for other purposes, not always shown in the data available to the public. The seaboard lines maintain floating equipment which use considerable coal and there is also tonnage required for shops, freight and passenger stations, pumping stations and other buildings.

Production of coal in Colorado during 1922 amounted to 10,005,000 tons. In North Dakota the 1922 output amounted to 1,180,000 tons.

PENNSYLVANIA BITUMINOUS

Area Covered, Progress Made and Present Achievement.

The bituminous coal fields of Pennsylvania are in the western part of the State covering practically all of the area beyond Center County, which is in the precise center of Pennsylvania. The districts are numerous. Commencing with the outlying Blossburg district in Tioga County, they may be enumerated as follows:

Blossburg	Allegheny River	Johnstown	Latrobe
Snowshoe	Indiana	Southfork-Windber	Greensburg
Clearfield	Two Lick	Quemahoning	Youghiogheny
Reynoldsville	Cambria	Broadtop	Connellsville
Low Grade Division	Shawmut	Meyersdale	Pittsburgh

The tonnage of coal from these fields exceeds the output of any other State in the Union. Quite aside from the anthracite tonnage, the bituminous tonnage in Pennsylvania puts the State in the first rank. The coal includes all classifications and all requirements of gas making, steam raising, coke making, smithing purposes, etc., can be met. There is even a small amount of cannel coal produced in one section. While not so prominent in the public eye as is the anthracite industry the bituminous industry is most important and adds greatly to, if indeed it does not actually create, the industrial pre-eminence of the Keystone State.

The first authentic records of bituminous coal production in Pennsylvania covering the State in its entirety dates from 1840, when the amount produced was 464,826 tons. In view of this large tonnage it is probable that production had been carried on for a considerable length of time prior to that date.

The growth of the industry was relatively slow. Production did not reach a million tons until 1850, when the anthracite business was four times as great and did not reach two million tons until 1857, when the anthracite was still four times as great. It reached 4,000,000 tons, however, in 1862, when the anthracite business was less than 10,000,000 tons and in 1870 was 7,798,518 tons, just about half of the anthracite tonnage. In 1880 the bituminous tonnage was 18,425,163 tons, considerably more than half of the anthracite business, and in 1890 it was 42,302,173 tons, or only 10 per cent less than the anthracite tonnage. In 1900 it amounted to 79,842,326 tons, which put it far in the lead of the anthracite business, and since then the growth has been great, anthracite becoming a minor factor in the coal trade of Pennsylvania.

The soft coal trade has had periods of great depression, but the growth of the tonnage has been most remarkable and has played a wonderful part in the upbuilding of the country.

On the following pages we show details of production by companies operating in the various mine inspection districts which now aggregate no less than 30 in number, all mines employing ten men or more being under inspection by the Department of Mines.

Pennsylvania Bituminous Production by Districts.

District	1920	1921	1922	District	1920	1921	1922
I	6,666,806	4,209,468	3,700,770	XVI ..	7,594,066	7,594,066	3,999,064
II	6,536,146	4,021,474	5,395,115	XVII .	4,079,621	2,688,612	2,174,260
III ...	3,285,010	2,270,779	3,023,294	XVII .	3,783,550	1,889,094	2,174,260
IV ...	4,900,869	3,039,707	3,157,845	XIX ..	5,852,699	5,060,534	4,965,408
V	6,505,841	3,525,268	4,203,256	XX ...	5,562,265	4,172,542	4,230,424
VI ...	5,262,109	4,679,671	3,784,940	XXI ..	8,043,690	4,378,051	4,582,812
VII ..	5,173,474	4,285,424	3,187,738	XXII .	5,030,735	3,174,672	2,560,673
VIII .	4,489,705	2,205,419	2,338,292	XXIII	7,838,462	5,942,331	5,231,755
IX ...	5,173,336	2,114,015	4,009,419	XXIV	5,603,820	5,694,189	3,700,193
X	3,012,805	3,087,418	1,941,280	XXV .	5,757,902	3,026,344	3,746,690
XI ...	5,549,156	4,094,901	5,078,217	XXVI	5,461,569	4,593,404	3,049,969
XII ..	6,027,562	3,398,047	3,410,134	XXVII	6,431,275	3,742,856	3,004,317
XIII ..	4,446,556	3,511,804	2,824,385	XXVIII	6,151,873	2,703,475	3,596,653
XIV ..	4,666,521	2,302,369	2,941,951	XXIX	7,543,946	6,051,370	5,574,086
XV ...	4,824,834	3,644,655	2,792,187	XXX	5,199,899	3,757,935	4,133,413
				Total	166,456,102	115,849,814	118,141,579

FIRST

Company	Address	1920	1921	1922
Bethlehem Mines Corp.....	Bethlehem	.....	.....	903,965
Pittsburgh Coal Co.....	Pittsburgh	1,459,782	896,190	722,919
Union C. & C. Co.....	Pittsburgh	1,482,824	62,142	355,476
Valley Camp Coal Co.....	Cleveland, O. ...	313,054	574,913	380,024
Yough. & Ohio Coal Co.....	Cleveland, O. ...	421,477	437,608	265,438
Vesta Coal Co.....	California	180,768	129,444	106,167
Warner-Yough. Coal Co.....	Fayette City	180,772	198,838	103,933
Acme C. &. C. Co.....	Rimersburg	180,662	321,056	222,676
South Fayette Coal Co.....	Bridgeville	97,002	68,705	44,547
Eclipse Gas Coal Co.....	Pittsburgh	135,268	197,236	110,000
National Mfg. Co.....	Pittsburgh	.....	198,126	250,157
Ontario Gas Coal Co.....	Pittsburgh	.....	174,980	120,480
Smaller operators		.....	105,527	114,988
Total		6,666,806	4,209,468	3,700,770

SECOND

H. C. Frick Coal Co.	Scottdale	339,490	399,941	386,200
Jamison C. & C. Co.	Greensburg	1,181,300	864,510	59,720
Hostetter-Connells Coke Co...	Scottdale	626,925	228,820	615,795
Keystone C. & C. Co.....	Greensburg	427,543	326,001	1,353,979
The Shenango Furnace Co.....	Wilpen	347,745	276,474	218,219
Latrobe-Connels. C. & C. Co...	Greensburg	402,077	225,864	248,168
New Alexandria Coke Co.....	Greensburg	166,208	30,520	119,631
Ramsey Coal Co., Inc.....	Ligonier	148,052	145,405	106,374
Westmore.-Connells C. & C. Co.	Ligonier	210,650	80,336	137,295
Ligonier Diamond C. & C. Co..	Ligonier	152,700	118,696	85,735
Saxman C. & C. Co.	Latrobe	119,060	66,739	76,489
Donohoe Coke Co.	Greensburg	120,283	61,869	75,341
Greens.-Connells. C. & C. Co...	Ligonier	114,108	98,593	119,657

Company	Address	1920	1921	1922
Atlantic Crushed Coke Co.	Greensburg	150,284	51,468	71,560
Mt. Pleasant By-Pro. Coal Co.	Greensburg	144,565	30,225	108,362
Vogele Coal Co.	Ligonier	76,249	40,324	51,380
St. Clair Coal Co.	Ligonier	64,034	47,618	32,560
Seger Bros. Coal Co.	Millwood	103,324	141,208	119,470
Oakville C. & C. Co.	Latrobe	108,817	76,877	85,237
Ridge Coal Co.	Latrobe	97,316	124,215	205,191
Westmoreland Mfg. Co.		.....	241,332	321,496
City Coal Co.	Latrobe	30,000	41,283	54,660
Barnett Coal Co.	Latrobe	63,318	57,115	122,566
Mt. Pleasant Coke Co.	Greensburg	168,868	1,640	151,533
E. A. Humphries C. & C. Co.	Scottdale	48,608	8,629	51,571
Greensburg Eastern Coal Co.	Latrobe	74,377	27,925	48,418
Bradurville C. & C. Co.	Blairsville	189,684	20,352	48,338
Westmore.-Fayette C. & C. Co.	Greensburg	67,680	26,086	43,128
Connellsville C. & F. Co.	Connellsville	120,567	.....	34,609
Peters Paper Co.		24,409	24,419	33,554
Unity-Connells. Coke Co.	Greensburg	29,385	5,767	30,070
Smaller operators		.....	.....	178,809
Total		6,536,146	4,021,474	5,395,115
	THIRD			
Allegheny Riv. Mining Co.	Kittanning	492,749	400,928	232,643
Mercer I. & C. Co.	Stoneboror	254,238	196,078	147,908
Sharon C. & L. Co.	Mercer	190,594	266,942	242,634
Erie CM. Co.	Butler	177,323	82,327	181,154
Mohawk Mining Co.	Kittanning	139,461	150,020	88,650
Argentine Coal Co.	Windber	82,210	32,776	63,464
Butts Cannel Coal Co.	Cleveland	72,861	30,030	53,364
Samuel Sherwin	Karns City	72,166	52,709	92,237
Bruin Coal Co.	Bruin	68,120	60,610	55,400
Zenith Coal Co.	Butler	65,691	39,578	83,695
Crescent Port. Cement Co.	Wampum	63,091	75,050	80,648
Pennsy Gas Coal Co.	Franklin	61,900	38,365	57,199
Cunningham Coal Co.	Chicora	59,126	50,993	47,988
Consolidated C. & C. Co.	Butler	54,028	86,461	124,962
North East CM. Co.	Pittsburgh	51,936	62,620	100,600
G. H. McFetridge Coal Co.	Butler	30,503	32,927	64,473
Mizener Coal Co.	Erie	.....	39,124	32,626
Scotch Hills Coal Co.	Pittsburgh	.....	50,656	35,339
West Kittanning Mfg. Co.	Kittanning	.....	50,178	33,954
Standard Coal Co.	Grove City	93,912	11,075	112,332
Annandale Coal Co.	Smithport	.....	20,910	56,177
MacDonald Coal Co.	Pittsburgh	.....	.....	55,500
Euclid Gas Coal Co.	Pittsburgh	.....	24,948	53,236
F. P. Filer & Co.	Mercer	.....	27,160	48,152
Brady's Bend Coal Co.	E. Brady	47,984	18,747	44,443
Vogby Coal Co.	Butler	31,310	10,537	43,508
Palmer Coal Co.	Pittsburgh	48,350	4,400	41,387

Company	Address	1920	1921	1922
Butler CM. Co.	Butler	.....	.....	39,149
Victoria Coal Co.	Pittsburgh	.....	10,270	38,583
Klee Coal Co.	Pittsburgh	.....	26,457	30,627
Fennelton Coal Co.	Du Bois	.....	5,962	30,000
Smaller operators		.....	.....	559,917
Total		3,285,010	2,270,779	3,023,294
	FOURTH			
Buffalo & Susq. C. & C. Co.	DuBois	755,297	468,522	350,812
Northwestern M. & Ex. Co.	DuBois	602,823	805,654	548,836
Shawmut Mining Co.	St. Marys	379,644	223,528	192,628
Kettle Creek C. M. Co.	Bitumen	252,196	50,269	49,210
Cascade C. & C. Co.	Buffalo, N. Y.	241,642	49,436	60,645
Peale, Peacock & Kerr	New York	175,864	125,151	119,361
Potts Run Coal Co.	Clearfield	162,928	36,980	57,479
Hopkins C. M. Co.	Lock Haven	122,540	106,243	51,355
Panther Run Coal Co.	Ridgway	119,347	131,893	66,415
Bald Hill Coal Co.	St. Benedict	88,890	89,780	46,183
Jefferson Coal Co.	Coal Glen	84,630	46,717	53,557
Toby C. M. Co.	Brockwayville	68,731	44,879	47,538
Wallwork Coal Co.	Summerville	57,846	45,914	32,748
Carnwarth Coal Co.	Winburne	52,374	46,950	33,964
A. B. Lansberry	Woodland	.....	38,769	59,753
Woodland Cannel C. Co.	Woodland	75,100	11,014	54,836
Woolridge Coal Co.	Woodland	.....	29,965	52,000
Goshen Coal Co.	Clearfield	51,659	10,650	48,000
Harbison-Walker Ref. Co.	Pittsburgh	62,282	27,423	46,560
Maple Run Coal Co.	Olanta	86,034	29,978	46,458
Potter, Bigler & Potter, Inc.	Clearfield	32,106	23,099	33,724
Moose Creek Coal Co.	Clearfield	8,942	11,193	33,400
Good Clay & Coal Co.	Patton	25,772	23,193	31,418
Smaller operators		.....	.....	941,415
Total		4,900,868	3,039,707	3,057,845
	FIFTH			
H. C. Frick Coke Co.	Scottdale	3,631,087	1,630,451	2,069,863
W. J. Rainey, Inc.	Uniontown	657,457	668,297	338,477
Oliver & Snyder Steel Co.	Uniontown	565,091	116,888	61,682
Amend Coal Co.	Uniontown	132,194	48,421	73,641
Oliphant C. & C. Co.	Uniontown	118,866	45,987	61,963
Brownfield C. & C. Co.	Uniontown	117,000	175,047	89,281
Hecla C. & C. Co.	Pittsburgh	94,702	74,910	77,356
Locust Hill Coal Co.	Point Marion	90,758	103,599	139,835
Evans C. & C. Co.	Uniontown	44,981	66,552	52,126
Point Marion Coal Co.	Uniontown	38,352	56,961	46,986
R. B. Hays Coal Co.	Rockwood	40,010	41,344	51,070
Hankins C. & C. Co.	Smithfield	47,224	40,926	54,788

Company	Address	1920	1921	1922
W. J. Reilly C. & C. Co.	Uniontown	.....	31,707	117,209
Fancy Hill Coal Co.	Cheat Haven	81,756	147,969	177,670
Davidson Conn'lls C. & C. Co.	Connellsville	44,315	12,171	73,900
Republic C. & C. Co.	Connellsville	22,300	7,200	70,525
Hankins C. & C. Co.		.....	.....	37,389
Liberty C. & C. Co.	Uniontown	49,397	2,357	36,021
Morgan C. & C. Co.	Uniontown	8,366	1,896	34,838
South Connells Coke Co.	Connellsville	.....	11,302	32,407
Tunnel C. & C. Co.	Uniontown	35,499	2,440	30,732
Small operators		.....	.....	1,375,497
Total		6,505,841	3,525,268	4,203,256
	SIXTH			
Cambria Steel Co.	Johnstown	1,786,343	954,567	1,357,371
Logan Coal Co.	Beaverdale	770,725	846,883	525,684
Maryland Coal Co. of Penn.	St. Michaels	242,730	370,859	192,329
Beaver Run Coal Co.	Beaverdale	155,156	127,244	67,858
Stineman C. & C. Co.	South Fork	150,292	75,057	85,691
Stineman CM. Co.	South Fork	100,472	52,698	66,402
Henriette CM. Co.	Dunlo	76,236	144,738	72,100
Telford Coal Co.	Johnstown	129,577	160,970	118,558
Mountain Coal Co.	Galitzin	80,907	102,874	51,131
Riverside CM. Co.	South Fork	100,982	168,974	87,860
Boucher-Cortright Coal Co.	Beaverdale	88,015	74,523	49,984
South Fork C. M. Co.	South Fork	67,604	91,672	54,836
Loyal Hanna C. & C. Co.	Onalinda	66,512	98,912	40,952
Penelec Coal Co.	Johnstown	88,733	65,499	40,356
Forks CM. Co.	South Fork	77,002	89,052	39,232
Jasahill Coal Co.	Johnstown	119,570	157,161	93,185
Victor Coal Min. Co.	Somerset	116,938	87,406	68,213
Grazier CM. Co.	Johnstown	110,944	76,456	71,165
Maple Ridge Coal Co.	New York	92,410	88,429	54,999
Smokeless Coal Co.	Johnstown	90,917	161,662	98,986
Cambria Fuel Co.	Beaverdale	65,042	133,431	74,786
Bird Coal Co.	Johnstown	30,768	35,369	168,491
Mineral Point Coal Co.	Johnstown	33,459	12,294	46,925
Huber Street Coal Co.	Johnstown	40,275	20,762	31,989
H. C. Stineman	South Fork	76,500	29,730	30,681
Smaller operators		.....	.....	183,189
Total		5,262,109	4,679,671	3,784,940
	SEVENTH			
Carnegie Coal Co.	Pittsburgh	1,108,984	746,180	448,402
Pittsburgh Coal Co.	Pittsburgh	529,386	568,786	317,827
Pitts. & Eastern Coal Co.	Cleveland	240,451	335,236	146,911
American Zinc & Chem. Co.	Carnegie	284,701	387,022	200,843
Bertha Coal Co.	Pittsburgh	423,907	479,058	343,359
Pittsburgh & Erie Coal Co.	Pittsburgh	145,198	140,200	45,226

Company	Address	1920	1921	1922
Verner C. & C. Co.	Pittsburgh	144,779	208,765	115,597
Pittsburgh & Western Mfg. Co.		.....	38,387	126,100
Bulger Block Coal Co.	Pittsburgh	156,099	117,389	121,964
Greensburg-Connasy, C. & C.Co.	Ligonier	152,464	258,092	82,070
W. H. Shinn Coal Co.	Pittsburgh	130,700	112,666	85,849
Superior Mining Co.	Lockvale	128,683	171,912	117,975
Burgettstown Coal Co.	Pittsburgh	171,781	235,472	122,737
Ollett Bros. Coal Co.	Bridgeville	86,475	64,668	36,868
Midway Coal Co.	Bridgeville	104,873	84,639	32,282
Handover Coal Co.	Pittsburgh	62,707	76,318	101,906
Harmon Creek Coal Co.	Pittsburgh	443,550	14,675	264,880
Pittsburgh Hanover C. Co.	Pittsburgh	69,440	.....	74,699
Hugh McHugh Coal Co.	Reimersdale	54,800	25,899	31,288
Hanlin Coal Co.	California	28,000	9,245	30,206
Smaller operators		.....	.....	355,683
Total		5,173,474	4,385,424	3,187,738
	EIGHTH			
Lehigh Valley Coal Co.	Snow Shoe	352,182	102,612	231,042
Morris Run Coal Co.	Morris Run	311,966	105,365	112,210
Clearfield Bit. Coal Corp.	Indiana	296,462	285,193	204,287
Pennsylvania C. & C. Corp.	Cresson	286,581	96,048	98,009
Peale, Peacock & Kerr	St. Benedict	262,144	243,216	147,664
Moshannon CM. Co.	Osceola Mills	218,751	122,133	117,482
Morrisdale Coal Co.	Morrisdale	198,367	51,822	57,362
Blossburg Coal Co.	Arnot	172,672	189,960	116,742
Fall Brook Coal Co.	Antrim	128,012	94,620	61,421
Cunard Coal Co.	Morrisdale	97,846	163,177	123,033
Victoria CM. Co.	Philipsburg	79,280	56,022	34,794
Penelec Coal Co.	Philipsburg	66,863	64,363	46,093
Roden C. M. Co.	Philipsburg	39,400	66,080	35,703
Moravian Coal Co.	Snow Shoe	93,700	27,133	52,250
Liberty C. M. Co.	Madera	81,810	24,487	36,379
Kristianson & Johnson	.....	.....	.....	34,543
Jacob Smutzinger	Munsens	34,236	24,812	34,462
Harbison-Walker Ref. Co.	Woodland	36,837	30,345	36,744
Smaller Operators	.....	.....	.....	769,304
Total		4,489,705	2,205,419	2,338,292
	NINTH			
H. C. Frick Coke Co.	Scottdale	3,486,416	1,111,336	2,404,187
W. J. Rainey, Inc.	Uniontown	321,123	296,427	174,866
Indian Creek C. & C. Co.	Somerset	22,726	83,272	139,357
Sagamore Coal Co.	Pittsburgh	45,707	45,257	56,643
Corrado Coal Co.	Connellsville	29,480	44,541	34,701
Marine Smokeless C. Co.	Somerset	45,215	33,477	54,475
American Mang. Mfg. Co.	Dunbar	153,813	81,437	74,348
Brownfield C. & C. Co.	Uniontown	93,960	59,806	58,097
Melcroft Coal Co.	Pittsburgh	65,341	113,525	182,448

Company	Address	1920	1921	1922
Vanderbilt C. & C. Co.	Connellsville	107,125	7,568	138,119
Youghiogheny C. & C. Co.	Dawson	127,926	.....	50,442
Howard Coal Co.	Indian Creek	30,000	18,740	46,393
Mahoning C. & C. Co.	Connellsville	45,470	2,880	38,883
Romney Coal Co.	Pittsburgh	.....	23,049	34,152
Campbell Coal Co.	Connellsville	14,442	1,958	34,070
Smaller operators		.....	.....	480,038
Totals		5,173,336	2,114,015	4,000,419
	TENTH			
Pennsylvania C. & C. Co.	Cresson	380,300	208,536	141,720
Sonman Shaft Coal Co.	Sonman	419,391	836,809	396,783
Shoemaker CM Co.	Philadelphia	222,421	297,498	170,742
C. A. Hughes & Co.	Altoona	202,952	261,647	145,594
Portage CM Co.	St. Benedict	190,472	245,113	120,318
Forge CM Co.	Philadelphia	128,104	167,032	89,015
Miller Coal Co.	Portage	92,953	107,954	65,629
Inland Coal Co.	Greensburg	125,059	75,423	62,962
Beachley Coal Co.	Johnstown	109,543	81,602	96,654
Taylor & McCoy C. & C. Co.	Baltimore, Md.	144,921	39,561	76,475
W. H. Piper & Co.	Philadelphia	70,888	52,668	43,573
Russet Coal Co.	Altoona	67,318	56,864	53,894
Lilly Coal Co.	Altoona	61,085	90,094	57,242
Sonman Run Coal Co.	Philadelphia	55,581	74,739	45,942
Bradley Mine Coal Co.	Altoona	.....	52,443	35,000
Forks Coal Co.	Altoona	.....	9,924	36,365
Smaller operators		.....	.....	303,372
Total		3,072,805	3,087,418	1,941,280
	ELEVENTH			
H. C. Frick Coke Co.	Scottdale	1,852,820	697,000	1,786,664
Keystone C. & C. Co.	Greensburg	1,103,106	776,048	933,898
Greensburg Coal Co.	Greensburg	457,609	393,281	309,146
Westmoreland Coal Co.	Irwin	388,284	296,851	254,205
Jamison C. & C. Co.	Greensburg	347,930	617,930	295,530
Yough. & Ohio Coal Co.	Cleveland, O.	324,781	458,181	185,562
Mt. Pleasant Conn. Coke Co.	Greensburg	229,478	56,928	278,666
Wheyl Coke Co.	Uniontown	185,375	170,308	178,112
Humphreys C. & C. Co.	Scottdale	99,406	113,341	109,469
Clare Coke Co.	Greensburg	90,000	87,150	49,400
W. J. Rainey, Inc.	New York	.....	125,256	188,608
Fulton C. & C. Co.	Youngwood	.....	84,357	51,466
Penn Valley C. M. Co.	Youngwood	.....	.....	62,241
Catherine Coal Co.	Scottdale	.....	25,442	53,135
Yukon Coal Co.	Johnstown	.....	.....	39,532
West Penn By Prod. Coal Co.	Pittsburgh	36,298	1,182	33,214
Thomas Hayes	Scottdale	.....	.....	32,500
Smaller operators		.....	.....	234,869
Total		5,549,156	4,094,901	5,078,217

TWELFTH

Company	Address	1920	1921	1922
Rochester & Pitts. C. & I. Co..	Rochester, N. Y..	1,239,995	688,766	625,376
N'western M. & Ex. Co.....	DuBois	600,402	596,766	326,374
Jefferson & C'field C. & I. Co..	Punxsutawney ..	547,821	250,886	183,837
Clearfield Bit. Coal Corp...	Clearfield	503,287	492,277	418,809
Cascade C. & C. Co.....	Sykesville	371,121	163,296	192,564
Onondaga CM. Co.....	Buffalo, N. Y....	230,045	57,197	77,947
Pennsylvania C. & C. Corp...	New York.....	1,971,760	29,332	43,238
Punxsutawney CM. Co.....	Punxsutawney ..	161,256	45,718	62,101
Banks Coal Co.....	St. Benedict	150,194	81,685	87,494
Pansy Coal Co.....	Punxsutawney ..	108,232	46,807	113,341
Ellsworth-Dunham Coal Co..	St. Benedict.....	108,194	116,429	80,413
Juneau CM. Co.....	Punxsutawney ..	94,550	41,040	51,651
Superior Coal Co.....	Glen Campbell...	81,072	99,168	49,233
McClure & Tyson Coal Co..	.....	65,796	86,142	97,750
Trojan CM. Co.....	Clearfield	.....	51,722	37,775
Woodland CM. Co.....	Patton	19,725	30,349	32,430
Williams Run CM. Co.....	Punxsutawney ..	118,121	.....	78,864
Bowersville CM. Co.....	Punxsutawney ..	69,701	.....	49,409
Frostburg Coal Co.....	Punxsutawney ..	105,811	.....	47,425
S. A. Run Coal Co.....	Punxsutawney ..	121,085	23,936	46,726
Light CM. Co.....	Punxsutawney ..	7,704	.....	42,827
Roberta Coal Co.....	Johnstown	6,400	25,430	42,300
Anita CM. Co.....	Punxsutawney ..	68,212	.....	39,861
Cushahe CM. Co.....	Burnside	29,719	.....	33,861
Urey Ridge Coal Co.....	Glen Campbell...	61,420	.....	31,891
Hess Coal Co.....	Punxsutawney ..	28,159	.....	31,626
Smaller operators	.....	.....	.....	484,610
Total	.....	5,562,265	3,398,047	3,410,134

THIRTEENTH

Pennsylvania C. & C. Corp....	Cresson	761,944	653,225	512,172
Nanty-Glo CM. Co.....	Nanty Y Glo....	506,549	147,597	.....
Liberty CM. Co.....	Philadelphia	423,600	301,722	181,200
Monroe CM. Co.....	Colver	253,756	350,512	285,513
Springfield CM. Co.....	St. Benedict	208,343	266,608	200,182
Lincoln CM. Co.....	Nanty Y Glo ...	162,688	71,810	107,764
Imperial Coal Corp.....	New York	143,582	363,321	131,022
Conemaugh CM. Co.....	Johnstown	139,671	175,274	101,525
Springfield Coal Co.....	St. Benedict	125,876	37,484	50,967
Re-or. Com. Eastern Bit. Mining bonds	Altoona	107,761	73,526	38,989
Irvona C. & C. Co.....	Rosebud	105,740	133,184	128,271
Betz CM. Co.....	Philadelphia	66,100	50,580	41,792
Fallen Timber Coal Co.....	Fallen Timber ...	59,357	71,816	42,326
Argyle CM. Co.....	Greensburg	119,510	110,342	66,831
Thomson-Lea CM. Co.....	La Jose	37,932	55,010	80,475
Heisley Coal Co.....	.....	.....	.....	215,029

Company	Address	1920	1921	1922
Altoona C. & C. Co	Altoona	81,254	22,793	59,967
Smaller operators		.....	.....	580,654
Total		4,446,556	3,511,804	2,824,385
	FOURTEENTH			
Saltsburg Coal Mining Co	Avonmore	424,796	97,544	137,058
Crucible Fuel Co	Crucible	251,285	98,417	124,432
Pittsburgh Plate Glass Co	Creighton	358,218	265,904	168,726
McFetridge Bros. Coal Co	Creighton	225,258	238,152	122,214
Pennsylvania Salt Mfg. Co.	Matrona	169,514	147,797	178,061
Pine Run Coal Co	Leechburg	234,731	101,165	154,562
Cochran Coal Co	Salina	215,653	70,810	175,037
Allegheny C. & C. Co	Kittanning	165,440	65,176	104,100
Avonmore C. & C. Co	Leechburg	225,891	68,362	34,459
Maher C. & C. Co	Leechburg	118,768	31,486	31,563
Armstrong County Coal Co.	Leechburg	100,001	30,280	45,712
Park Coal Co	Leechburg	97,597	43,486	95,438
Kiskimineitas Coal Co	Blairsville	99,014	99,153	127,386
Kerr Coal Co	Freeport	134,194	36,156	45,427
U. S. Aluminum Co	Pittsburgh	121,038	38,260	79,463
Paulton Coal Mining Co	Leechburg	105,354	37,477	59,818
Conemaugh Coal Co	Saltsburg	61,189	39,187	73,069
Ben Franklin Coal Co	Vandergrift	77,027	76,650	90,107
Johnetta Brick & Coal Co	Johnetta	71,946	63,144	31,064
Gladys Coal Co	Leechburg	58,050	33,173	71,358
Kiski Valley Coal Co	New Bethlehem	43,583	32,749	40,918
Saltsburg Colliery Co	Leechburg	44,021	22,977	123,913
Apollo Coal Co	Leechburg	77,078	26,268	56,335
Butler Junction Coal Co	Leechburg	26,792	14,280	44,728
Amer. Sheet & Fin. Plate Co.	Pittsburgh	37,956	18,520	39,525
Aladdin C. & C. Co	Leechburg	69,378	22,326	37,283
Bagdad C. & C. Co	Leechburg	30,604	11,461	33,914
Pine Run C. & C. Co	Leechburg	.....	.....	33,353
Clark Coal Co		.....	2,705	32,612
Smaller operators		.....	.....	549,778
Total		4,666,521	2,302,369	2,941,951
	FIFTEENTH			
Pennsylvania C. & C. Corp.	New York	1,171,566	515,413	458,047
Barnes & Tucker Co	Barnesboro	472,218	705,332	556,110
Sterling Coal Co	Elmora	330,398	273,168	176,164
Carrolltown Coal Co	St. Benedict	241,153	128,432	82,217
Rich Hill Coal Co	Hastings	135,062	313,320	143,823
Cherry Tree Coal Co	St. Benedict	316,823	278,393	180,164
Madeira, Hill CM. Co	Philipsburg	175,913	121,430	128,832
Duncan Spangler Coal Co	Philadelphia	194,230	84,447	84,929
Empire CM. Co	Clearfield	156,703	89,842	81,409
Clearfield Bit. Coal Corp	Clearfield	135,149	183,446	126,271

Company	Address	1920	1921	1922
Jos. H. Reilly Coal Co.	Philadelphia	104,977	58,577	45,638
Cymbria Coal Co.	Altoona	132,748	132,530	81,409
Watkins CM. Co.	New York	101,054	163,113	139,437
Hastings C. & C. Co.	Cherry Tree	64,424	82,976	41,034
Hastings Fuel Co.	Hastings	.....	245,545	49,257
Navy Smokeless Coal Co.	Johnstown	96,500	37,293	42,901
McCombie Coal Co.	Patton	.....	52,000	35,706
Smaller operators		.....	.....	238,353
Total		4,824,834	3,644,655	2,792,187
	SIXTEENTH			
H. C. Frick Coke Co.	Scottdale	2,892,229	2,677,248	1,493,328
W. J. Rainey, Inc.	Uniontown	553,801	622,465	277,997
Pittsburgh Steel Co.	Pittsburgh	494,604	304,866	208,321
Hecla C. & C. Co.	Pittsburgh	411,675	265,353	296,957
Redstone C. & C. Co.	Pittsburgh	344,047	377,614	208,960
American Coke Corp.	Pittsburgh	336,058	256,320	167,430
Connellsville Central Coke Co.	Pittsburgh	315,096	199,524	151,550
Republic I. & S. Co.	Republic	305,163	282,529	174,902
Thompson Connells Coke Co.	Republic	291,261	128,748	142,485
Tower Hill Connells Coke Co.	Uniontown	284,864	130,467	169,997
Eastern Coke Co.	Pittsburgh	263,034	127,521	153,574
Bourne-Fuller Coke Co.	Cleveland, O.	255,296	209,666	123,016
Husted-Semans C. & C. Co.	Uniontown	154,128	68,995	80,600
Superior Connells Coal Co.	Lockvale	121,843	167,552	52,472
South Fayette Coal Co.	Pittsburgh	69,562	103,352	97,120
American Connells Fuel Co.	Uniontown	.....	.....	58,312
Etna Connells Coke Co.	Connellsville	.....	.....	34,198
Smaller operators		.....	.....	107,865
Total		7,594,066	5,993,377	3,999,064
	SEVENTEENTH			
Pittsburgh Ter. Coal Co.	Pittsburgh	1,745,203	1,213,667	852,232
Pittsburgh Coal Co.	Pittsburgh	1,125,217	766,793	416,370
Chartiers Creek Coal Co.	Pittsburgh	272,075	97,886	162,989
Lindley Coal Co.	Pittsburgh	142,000	198,983	60,982
Consumers Coal Co.	Charleroi	108,240	164,749	118,462
Union Valley Coal Co.	Pittsburgh	.....	.....	77,400
First Pool Gas Coal Co.	Pittsburgh	.....	.....	40,060
Smaller operators		.....	.....	445,765
Total		4,079,621	2,688,612	2,174,260
	EIGHTEENTH			
Rockhill C. & I. Co.	Robertsdale	543,909	246,857	235,629
Berwind-White CM. Co.	Houtzdale	305,879	257,987	107,099
James M. McIntyre & Co.	Six Mile Run	182,383	65,169	86,389
Joseph E. Thropp	Everett	138,684	62,040	44,095
Bulah Shaft Coal Co.	Ramey	117,602	34,960	45,537
Colonial Iron Co.	Riddlesburg	144,854	50,536	45,428

Company	Address	1920	1921	1922
Grampian CM. Co.	Clearfield	140,231	97,968	115,413
Langdon Coal Co.	Huntington	102,276	45,426	38,111
Yorkshire Coal Co.	Madera	118,278	55,651	43,610
Hale Coal Co.	Philipsburg	122,100	104,834	91,660
Shannon Co.	Dudley	35,176	68,205	59,937
Cedar Hill CM. Co.	Osceola Mills	54,087	44,376	35,692
Kay CM. Co.	Everett	78,589	37,297	44,484
Stine CM. Co.	Osceola Mills	46,250	.....	83,819
Du Shaw CM. Co.	Osceola Mills	27,738	29,335	38,942
J. H. Miller	Joller	50,416	27,531	32,611
Smaller operators		.....	.....	755,043
Total		3,783,550	1,889,094	1,903,039

NINETEENTH

Westmoreland Coal Co.	Irwin	1,989,973	1,791,304	1,683,052
Ocean Coal Co.	Heominie	969,369	630,313	582,025
Cambria Steel Co.	Philadelphia	662,612	668,312	634,108
Keystone C. & C. Co.	Greensburg	539,094	418,114	303,449
Pittsburgh Coal Co.	Pittsburgh	392,926	554,180	387,305
Irwin Gas Coal Co.	Greensburg	334,396	280,332	319,644
Hillman C. & C. Co.	Pittsburgh	323,610	291,646	377,575
Delmont Gas Coal Co.	Delmont	262,934	228,846	186,637
Howard Gas Coal Co.	Greensburg	71,566	60,250	97,970
W. B. Skelly Coal Co.	Export	62,719	73,116	45,742
Seehart Coal Co.		.....	.....	34,074
Smaller operators		.....	.....	169,877
Total		5,852,699	5,060,534	4,965,408

TWENTIETH

Consolidation Coal Co.	Baltimore, Md.	1,350,677	963,719	977,814
Hillman C. & C. Co.	Pittsburgh	619,680	618,173	385,673
Quemahoning Coal Co.	Somerset	571,804	595,378	418,459
Brothers Valley Coal Co.	Macdonaldton	243,110	73,165	145,062
Penn Smokeless Coal Co.	Pittsburgh	223,592	189,385	99,740
Davis C. & C. Co.	Baltimore, Md.	220,783	251,013	166,181
Quemahoning Creek Coal Co.	Somerset	138,718	195,057	122,330
Barnes Quemahoning Coal Co.	New York, N. Y.	127,604	150,284	85,544
C. J. Rowe Bros.	Meyersdale	115,060	78,129	127,972
Pine Hill Fuel Co.	Meyersdale	81,427	91,069	65,981
Listie Coal Co.	Somerset	78,361	106,131	78,090
Hillworth Coal Co.	Acosta	77,709	76,144	44,149
Berlin Coal Co.	Johnstown	69,580	57,320	51,810
Reading Iron Co.	Kimmelton	51,159	76,001	59,070
Penelec Coal Corp.	Johnstown	20,581	36,669	34,652
Atlantic Big Vein Coal Co.	Meyersdale	105,249	27,694	92,482
Shipley C. M. Co.	Meyersdale	.....	15,646	60,353
Grassy Run Coal Co.	Elk Lick	66,776	26,028	58,189

Company	Address.	1920	1921	1922
Meyersdale Fuel Co.	Somerset	.....	14,892	56,070
Berkey Bros. Coal Co.	Meyersdale	37,500	23,146	47,581
MacGregor Coal Co.	Somerset	50,892	27,639	41,637
Keystone Coal Co.	York	60,508	27,016	41,325
Rockwood Coal Co.	Rockwood	.....	17,400	39,282
Geo. G. Bowman Coal Co.	Boynton	21,210	22,760	34,257
Forge C. M. Co.	Philadelphia	.....	7,731	33,549
Sanner Coal Co.	Hooversville	8,795	16,019	31,999
Enterprise Coal Co.	Garrett	55,337	22,760	30,538
Smokeless Quemah. C. Co.	Somerset	36,826	23,898	30,463
Smaller operators		.....	.....	770,172
Total		5,562,265	4,172,542	4,230,424

TWENTY-FIRST

Vesta Coal Co.	California	3,885,035	1,486,349	2,058,058
Pittsburgh Coal Co.	Pittsburgh	793,087	506,983	428,070
Lilley C. & C. Co.	Charleroi	593,911	209,922	229,814
Reliance Coke & Fur. Co.	Denbo	368,032	382,746	304,711
Crucible Fuel Co.	Pittsburgh	425,973	291,800	271,340
Clyde C. & C. Co.	Pittsburgh	404,714	132,852	133,083
Fredericktown C. C. & C. Co.	Fredericktown	198,845	37,659	50,020
Diamond C. & C. Co.	Pittsburgh	261,469	10,804	74,819
Maple Glen Coal Works	Pittsburgh	148,722	57,158	67,471
Pickands, Mather & Co.	Cleveland, O.	185,081	520,194	415,562
Clarksville Gas Coal Co.	Pittsburgh	93,075	115,444	80,559
Champion Gas Coal Co.	Pittsburgh	65,374	45,834	30,683
H. C. Frick Coke Co.	Scottdale	166,317	242,423	131,547
Trumbull Coal Co.	Pittsburgh	72,271	182,696	118,137
Lacey Coal Co.	Pittsburgh	50,834	52,000	40,778
Chartiers Southern C. Co.	.....	.....	4,138	39,649
Fifth Pool C. & C. Co.	Denbo	.....	5,591	38,097
Small operators	.....	.....	.....	76,444
Total		8,043,690	4,378,051	4,582,812

TWENTY-SECOND

Pittsburgh Coal Co.	Pittsburgh	3,080,432	2,262,855	1,345,782
Hillman C. & C. Co.	Pittsburgh	452,475	100,101	147,678
Diamond C. & C. Co.	Pittsburgh	273,946	162,414	142,505
Westmoreland Coal Co.	Irwin	226,377	262,890	193,799
Lowber Gas Coal Coal Co.	Pittsburgh	104,501	100,130	104,000
H. J. Myers	McKeesport	.....	34,644	35,000
State Road Coal Co.	McKeesport	101,682	11,931	40,652
Bowman Bros.	McKeesport	34,835	10,607	33,955
T. H. & R. A. Taylor	.....	.....	.....	30,387
Smaller operators	.....	.....	.....	480,320
Total		5,030,735	3,174,692	2,560,673

TWENTY-THIRD

Company	Address	1920	1921	1922
H. C. Frick Coke Co	Scottdale	3,311,424	3,320,876	1,777,352
Hecla C. & C. Co	Pittsburgh	299,918	139,696	145,430
Consolidated Coke Co	Grays Landing	619,764	323,180	297,802
Republic I. & S. Co	Uniontown	398,360	49,451	178,255
Puritan Coke Co	McClellandtown	329,357	264,172	201,282
Poland Coal Co	Pittsburgh	244,987	112,073	268,978
Reilly-Callaghan C. & C. Co	Smithfield	198,879	145,762	160,024
Buckeye Coal Co	Youngstown, O	253,384	460,650	273,211
Pittsburgh Steel Co	Pittsburgh	290,842	102,272	204,888
McKeefrey Coal Co	Martin	118,254	93,885	45,490
James H. Hoover	Messmore	69,290	46,290	45,043
West Point Marion Coal Wks	Point Marion	63,880	54,216	60,155
Maple-Sterling Coal Works	Dunkard	76,037	99,000	122,533
Penn-Pitt C. & C. Co	Point Marion	138,649	98,386	113,504
New Geneva Fuel Co	New Geneva	63,543	57,430	50,214
Fayette Coke Co	New Salem	.....	.....	36,041
United States Fuel Co	Pittsburgh	.....	.....	36,356
Nicholson Coal Co	Uniontown	50,235	43,621	53,296
Greene Co. C. & C. Co	Point Marion	50,000	38,524	50,922
American Coke Corp	Pittsburgh	.....	79,618	83,445
Atlantic Coal Co	Meyerdale	45,280	48,323	67,680
Fredericktown C. & C. Co	Fredericktown	21,621	101,870	120,149
Rosedale Coal Co	Morgantown, W.Va.	.....	38,617	47,257
Sterling Sisters Coal Co	Masontown	.....	34,418	38,226
Warwick Coal Co	Indian Creek	.....	31,556	75,312
Moffit-Sterling Gas C. Co	Charleroi	.....	2,507	52,492
Crawford Coal Co	Homestead	.....	.....	47,844
Stevenson Coal Co	Point Marion	.....	7,795	38,145
Winstead Coal Co	Uniontown	.....	9,641	36,483
Leage Coal Co		.....	.....	34,047
Byrne Coal Co	Scottdale	.....	.....	30,364
Smaller operators		.....	.....	439,535
Total		7,838,462	5,942,331	5,231,755

TWENTY-FOURTH

Berwind-White CM Co	Windber	2,612,898	2,610,237	1,353,610
Reitz Coal Co	Windber	906,104	676,223	466,903
Arrow CM Co	Pittsburgh	167,396	186,397	89,396
Huskin CM Co	Windber	160,000	171,236	157,169
Valley Smokeless Coal Co	Johnstown	151,166	158,679	124,477
Wilbur CM Co	Blairsville	139,172	219,601	178,595
Knickerbocker Smoke. C. Co	Blairsville	120,531	127,187	78,676
Baker-Whiteley Coal Co	Baltimore, Md.	112,270	142,562	111,828
Loyal Hanna C. & C. Co	Cairnbrook	110,824	279,765	146,647
Imperial Coal Corp	New York	106,394	153,276	60,996
Somerset Mining Co	Blairsville	95,899	99,982	71,672
Ideal Coal Co	Johnstown	94,374	130,924	129,742

Company	Address	1920	1921	1922
Pennsylvania Collieries, Inc.	New York	84,343	96,820	49,596
Egolf CM Co.	Windber	74,231	40,558	47,040
Colonial Coal Co.	Johnstown	62,786	105,092	88,770
Shade CM Co.	Johnstown	61,834	59,358	49,000
Lorain Steel Co.	Johnstown	28,485	50,363	62,625
Old Colony CM Co.	Altoona	20,000	32,721	36,935
Sheesley Coal Co.	Johnstown	31,260	32,364	53,115
Smaller operators		.....	.....	311,788
Total		5,603,820	5,694,189	3,700,193
	TWENTY-FIFTH			
Bethlehem Mines Corp.	Bethlehem	.....	345,135	758,470
Jefferson & Clearf. C. & I. Co.	Indiana	1,293,557	272,287	556,042
Pittsburgh Gas Coal Co.	Indiana	807,147	429,465	532,507
Russell CM. Co.	St. Benedict	347,264	325,729	260,531
Clearfield Bit. Coal Corp.	Clearfield	285,032	418,167	366,536
Coal Run Mining Co.	Indiana	474,747	112,286	227,031
Seneca CM. Co.	Buffalo	182,964	84,519	64,426
Empire CM. Co.	Philadelphia	151,464	117,356	65,090
Tide CM. Co.	Indiana	143,750	65,847	42,562
Penn C. & C. Corp.	Barnesboro	91,782	62,463	45,260
Penn. Collieries Co., Inc.	Philadelphia	70,000	63,275	43,687
Roch. & Pitts. C. & I. Co.	Rochester	.....	286,222	357,120
Harve-Mack Coal Co.	Clymer	43,428	67,975	34,488
Savan. Collieries Co.	Indiana	24,451	39,918	57,802
Marion Centre CM. Co.	Philadelphia	65,940	71,579	80,299
Glenside Coal Co.	Indiana	59,710	64,065	46,762
Smaller operators		.....	.....	208,072
Total		5,757,902	3,026,344	3,746,690
	TWENTY-SIXTH			
National Mining Co.	Morgan	938,208	1,164,484	619,935
Pittsburgh Coal Co.	Pittsburgh	870,805	362,469	151,618
Meadow Lands Coal Co.	Pittsburgh	498,982	814,700	386,005
McClane Mining Co.	Washington	477,255	367,142	237,700
Yough, & Ohio Coal Co.	Cleveland, O.	374,761	375,309	187,308
Henderson Coal Co.	Canonsburg	300,294	47,850	99,340
Duquesne C. & C. Co.	Avella	270,172	309,873	196,338
Carnegie Coal Co.	Pittsburgh	241,145	114,055	56,556
Lincoln Gas Coal Co.	Pittsburgh	239,494	37,584	163,998
Pryor Coal Co.	Greensburg	47,291	43,208	32,350
Canonsburg Gas Coal Co.	Pittsburgh	175,046	39,981	70,152
Waverly C. & C. Co.	Pittsburgh	151,277	152,097	111,055
Export Coal Co.	Expedit	120,122	151,564	138,921
Country Club Coal Co.	Pittsburgh	118,969	36,000	35,498
Avella Coal Co.	Greensburg	107,093	145,819	111,270
Pittsburgh & So'western C. Co	Avella	103,588	.....	52,156
Washington Gas Coal Co.	Pittsburgh	58,045	138,746	125,882

Company	Address	1920	1921	1922
Jefferson Gas Coal Co	Pittsburgh	.....	.....	62,300
Smaller operators		.....	143,146	211,587
Total		5,461,569	4,593,404	3,049,969
TWENTY-SEVENTH				
Pittsburgh Coal Co	Pittsburgh	1,177,517	581,842	475,199
Washington C. & C. Co	Dawson	987,462	769,402	495,304
H. C. Frick Coke Co	Scottdale	797,808	207,405	379,251
Diamond C. & C. Co	Pittsburgh	430,201	66,306	126,423
Brier Hill Coke Co	Brier Hill	299,084	176,094	123,034
Pittsburgh & Erie Coal Co	Pittsburgh	286,850	204,587	48,799
Hillman C. & C. Co	Pittsburgh	279,912	67,946	87,788
Monessen C. & C. Co	Pittsburgh	236,019	170,876	129,745
Lowber Gas Coal Co	Lowber	235,291	209,121	205,880
Lincoln C. & C. Co	Waltersburg	215,200	141,664	119,700
W. J. Rainey, Inc	Uniontown	211,801	326,865	161,200
Jamison C. & C. Co	Greensburg	200,240	492,400	299,820
American Coke Corp	Pittsburgh	109,442	132,950	70,010
Chamouni Coal Co	Fayette City	58,828	96,944	51,483
Forsythe Coal Co	Pittsburgh	26,362	13,528	48,256
Century Coke Co	Brownsville	100,001	1,541	46,531
Snowden Coke Co	Pittsburgh	240,966	659	30,700
Smaller operators		.....	.....	105,194
Total		6,431,275	3,742,856	3,004,317
TWENTY-EIGHTH				
Buffalo & Susq. C. & C. Co	DuBois	926,856	588,105	413,083
Cowanshannock C. & C. Co	Rochester, N. Y.	876,566	579,164	520,277
Allegheny River Mfg. Co	Kittanning	657,180	339,071	253,408
Pine Run Coal Co	New Bethlehem	324,792	51,737	84,606
Summit CM Co	Punxsutawney	235,833	107,637	82,642
Pennsy Coal Co	Franklin	226,607	163,686	202,922
Acme Gas Coal Co	Greensburg	203,039	83,954	91,214
Shawmut Mining Co	St. Marys	186,678	83,030	55,818
Keystone Mining Co	East Brady	145,057	299,356	72,627
Pawnee Coal Co	Kittanning	126,447	68,687	38,617
Red Bank Coal Co	Pittsburgh	96,366	51,112	119,024
Wallwork Mining Co	Summerville	58,529	42,737	36,383
Lumstead Coal Co	Echo	47,215	69,390	56,977
Klamath Coal Co	Lock Haven	15,160	52,195	67,162
W. J. James	Franklin	42,748	51,246	32,759
Summerville Coal Co	Brookville	16,000	41,999	40,000
Rimerton Coal Co	Leechburg	40,268	31,855	33,103
Harvey Coal Corp	Clarion	30,322	30,847	31,072
Hamler Coal Co	Clarion	53,780	18,711	67,162
Timblin Coal Co	Timblin	31,328	11,088	39,851
Eureka Coal Co	Strattonville	32,002	21,758	38,758
Republic Gas Coal Co	Kittanning	19,009	12,658	36,703

Company	Address	1920	1921	1922
Kittanning I. & S. Mfg. Co.	Pittsburgh	111,498	8,462	35,299
Liberty Coal Co.	Berlin	.....	.....	35,125
Small operators		.....	.....	1,129,056
Total		6,151,873	3,703,475	3,596,653
	TWENTY-NINTH			
Ford Collieries Co.	Pittsburgh	1,322,690	1,025,398	947,475
Pittsburgh Coal Co.	Pittsburgh	1,170,582	1,072,452	659,886
Valley Camp Coal Co.	Cleveland, O.	938,170	1,270,846	891,905
Republic I. & S. Co.	Pittsburgh	827,812	395,586	504,352
Union Collieries Co.	Pittsburgh	458,545	302,810	347,903
Inland Collieries Co.	Harmarville	363,865	382,714	179,043
Superior Fuel Co.	Russellton	314,936	163,421	156,949
Newfield By-Products Coal Co.	Cleveland, O.	207,851	226,639	105,470
Diamond C. & C. Co.	Pittsburgh	217,645	78,844	90,401
Montour & Lake Erie Coal Co.	Pittsburgh	130,181	41,396	44,687
Consumers Mining Co.	Steubenville, O.	112,790	155,009	300,924
Fair Haven Coal Co.	Pittsburgh	100,130	41,874	68,492
Harper Coal Co.	Turtle Creek	87,247	76,561	49,593
Sun Coal Co.	Stoneboro	85,928	44,721	49,068
Marcon Coal Co.	Fayette City	59,881	31,249	32,461
Hall Coal Co.	Turtle Creek	50,400	55,957	47,882
Allegheny-Pittsburgh C. Co.	Pittsburgh	36,977	67,322	276,835
Harwick C. & C. Co.		.....	384,695	323,708
Clever Gas Coal Co.	Connellsville	46,020	14,559	66,832
Montour Coll. Co.		.....	.....	48,019
Smaller operators		.....	.....	382,201
Total		7,543,946	6,051,370	5,574,086
	THIRTIETH			
Vinton Colliery Co.	Vintondale	639,961	619,626	666,876
Ebensburg Coal Co.	Colver	574,522	483,762	430,614
Brush Creek CM Co.	Indiana	845,046	169,190	377,574
Commercial CM Co.	Expedit	245,460	142,302	89,427
Graceton Coke Co.	Graceton	198,100	201,830	200,635
Fairfield C. & C. Co.	Bolivar	186,122	190,187	122,887
Dilltown Smokeless Coal Co.	Dilltown	202,148	62,548	75,864
Potter C. & C. Co.	Corral	229,920	132,335	203,199
Homer City Coal Co.	Homer City	112,046	68,379	105,420
Big Bend CM. Co.	Expedit	75,697	39,557	43,485
Ridgeview Coal Co.	Bolivar	122,285	157,346	98,416
Imperial Coal Corp.	New York	92,983	240,065	148,828
Maher & Graff Coal Co.	Blairsville	88,000	57,000	65,092
Keystone Coal Co.	Greensburg	59,564	128,608	161,964
Armorford CM Co.	Blairsville	85,000	48,000	75,500
Kiskiminitas Coal Co.	Blairsville	121,002	70,403	106,108
Bells Mill Coal Co.	Blairsville	55,043	52,062	56,660
Garfield Smokeless Coal Co.	Bolivar	87,588	80,664	57,116
Watson Coal Co.	Saltsburg	102,102	74,151	129,721

Company	Address	1920	1921	1922
Johnstown Smok. C. Co	Johnstown	100,001	113,675	150,213
Margaret C. M. Co	Bridgeville	75,000	70,000	100,500
Penelec Coal Corp	Johnstown	.....	76,384	70,313
Piney Run Mfg. Co	Johnstown	40,546	34,749	38,713
Bethlehem Mines Corp	Bethlehem	.....	.....	218,109
Smith Coal Co	Indiana	.....	45,115	63,500
Standard Smok. Co	Indiana	.....	17,290	34,034
Smaller operators		.....	.....	242,645
Total		5,199,899	3,757,935	4,133,413

Pennsylvania Bituminous Output by Counties.

Production of bituminous coal in Pennsylvania, by counties in 1921, five years previous was:

County	1916	1917	1918	1919	1920	1921
Allegheny	17,007,431	17,836,377	17,375,035	14,856,781	14,605,700	11,931,527
Armstrong	5,430,188	5,574,861	6,051,753	4,665,232	5,248,000	3,388,762
Beaver	91,553	129,163	128,572	139,294	125,900	161,409
Bedford	721,589	947,053	1,050,528	704,289	640,800	317,244
Blair	435,792	271,598	279,817	181,209	172,700	92,144
Bradford and Lycoming	39,005	47,151	31,299	13,373	.....	*b* 55,296
Butler	1,180,008	1,201,963	1,397,927	1,128,192	1,292,400	923,391
Cambria	19,588,350	19,730,770	20,569,253	16,899,818	17,182,400	16,339,228
Center	1,819,007	1,999,407	1,984,664	1,129,296	1,457,300	764,994
Clarion	1,368,544	1,380,494	1,607,641	1,393,647	1,377,400	1,248,294
Clearfield	8,876,823	9,336,533	9,376,429	7,573,392	7,622,200	5,853,922
Clinton	422,062	401,812	360,123	288,100	289,700	83,641
Elk	937,583	907,187	968,868	947,595	963,400	878,201
Fayette	34,249,848	32,083,027	32,925,888	29,660,105	32,998,300	19,260,778
Greene	744,860	900,378	1,269,425	1,423,118	1,746,600	2,294,801
Hunt'gdon	962,332	1,155,602	1,371,562	833,690	833,100	484,008
Indiana	11,022,789	12,053,766	12,743,190	8,526,404	9,613,900	6,357,971
Jefferson	5,764,525	5,551,658	5,140,833	3,841,478	4,749,400	2,707,894
Lawrence	*a* 614,994	132,929	107,086	140,054	94,500	193,657
Mercer	(*a*)	527,421	600,785	481,521	487,900	479,387
Somerset	9,340,568	9,454,537	10,264,083	10,433,752	9,913,000	8,975,805
Tioga	829,561	866,803	834,385	593,637	715,100	437,702
Washington	18,119,353	21,513,603	23,537,603	19,515,856	22,575,700	14,716,984
West'land	30,499,703	28,027,782	28,121,234	24,947,773	22,933,000	18,066,398
Small mines	200,108	*b* 404,102	*b* 355,615	273,783	.....	.....
Total	170,295,424	172,448,142	178,550,741	150,758,154	157,700,400	116,013,942

a Lawrence County includes Mercer County. *b* Includes McKean County.

The Bureau of Mediation & Arbitration of the Pennsylvania Department of Labor & Industry, place the time lost through strikes in the anthracite mines in 1922 at 132½ working days. The total number of man days lost in the anthracite and bituminous mines of Pennsylvania in 1922 is placed at 38,000,000. The loss in wages is figured at $190,000,000.

Pennsylvania Bituminous Deposits and Reserves.

Total deposits, amount mined and amount recoverable, by counties, is shown in the following table:

County	Original Deposit Tons	Mined Out Tons	Recoverable Tons
Allegheny	3,180,400,000	969,200,000	1,486,900,000
Armstrong	3,750,700,000	107,290,000	2.491,100,000
Beaver	1,116,400,000	1,400,000	560,000,000
Blair	61,900,000	11,900,000	25,000,000
Bradford	39,000,000	300,000	19,000,000
Butler	4,550,000,000	30,000,000	2,300,000,000
Cambria	5,383,000,000	466,900,000	3,638,080,000
Cameron	42,000,000	100,000	20,000,000
Centre	422,000,000	60,000,000	184,000,000
Clarion	1,817,000,000	37,000,000	1,059,000,000
Clearfield	3,902,000,000	308,210,000	2,165,400,000
Clinton	93,000,000	5,000,000	44,000,000
Elk	610,000,000	27,000,000	297,000,000
Fayette	5,229,734,000	899,544,000	2,604,400,000
Greene	10,330,094,000	42,490,000	7,011,400,000
Indiana	6,339,400,000	299,200,000	4,288,700,000
Jefferson	3,420,000,000	180,000,000	1,900,000,000
Lawrence	611,000,000	300,000	311,000,000
Lycoming	68,000,000	200,000	34,000,000
Mercer	368,000,000	40,000,000	172,000,000
McKean	320,700,000	300,000	136,000,000
Somerset	6,091,800,000	187,384,000	3,986,900,000
Tioga	124,400,000	23,200,000	52,000,000
Washington	10,526,023,000	557,763,000	5,481,680,000
Westmoreland	6,381,504,000	1,218,141,000	3,297,500,000
Broad Top Field	391,000,000	46,843,000	265,800,000
Total	75,259,055,000	5,519,665,000	43,830,860,000

Buffalo & Susquehanna R.R. Shipments.

Month	Revenue 1921	Revenue 1922	Company 1921	Company 1922	Total 1921	Total 1922
January	111,523	80,687	7,650	5,972	119,173	86,659
February	86,189	96,241	8,217	6,868	94,406	103,109
March	82,300	74,700	5,458	12,042	87,758	86,742
April	54,467	15,572	2,703	27	57,170	15,599
May	84,381	9,158	5,610	673	89,991	9,831
June	61,243	12,804	4,653	1,709	65,896	14,513
July	62,777	6,840	4,124	437	66,901	7,277
August	75,114	33,571	4,863	2,495	79,997	36,066
September	80,611	110,427	5,686	4,228	86,297	114,655
October	103,988	93,824	6,541	6,324	110,529	100,148
November	86,510	121,813	6,470	6,797	92,980	128,610
December	70,581	141,953	6,431	8,786	77,012	150,739
Total	959,684	797,590	68,406	56,358	1,028,090	853,948

Coal and Coke Shipments by Customs Districts.

Below is a statement for the calendar years 1921 and 1922, which shows in concise form the business done in coal and coke from each of the several customs districts in gross tons:

	Anthracite		Bituminous		Coke	
	1921	1922	1921	1922	1921	1922
Philadelphia	65,139	42,459	613,742	125,847	12,894	14,478
Maryland	3,649	10,995	1,488,051	92,626	18,138	14,235
New York	131,875	60,278	81,641	7,808	6,884	6,415
South Carolina	173	.....	298,506	122,111	.....	.....
Virginia	4,878	.....	6,015,929	841,039	3,733	2,029
Mobile	.....	125	16,990	14,552	135	9,293
New Orleans	.....	211	17,657	8,705	1,567	9,987
Arizona	7,893	3,019	24,100	19,926	166	27,101
El Paso	377	1,088	83,698	45,124	2,090	3,692
San Francisco	59	128	2,107	5,225	344	140
San Diego	48	58	161	178	3	1
Los Angeles	4	2	6	.....	.....	.....
Washington	1,077	122	14,450	11,001	113	277
Florida	27	488	155,577	47,709	5,656	2,972
Sabine	31	.....	50	48	220	24
Galveston	.....	1	11	188	41	43
Georgia	.....	.....	9,259	.....	201	689
San Antonio	35,847	1,081	14,111	2,252	17,146	2,954
Buffalo	2,161,386	1,133,732	2,926,663	2,690,841	94,087	176,817
Dakota	25,497	9,098	46,779	23,170	7,235	25,307
Duluth-Superior	8,058	3,573	106,357	55,493	1,299	2,999
Michigan	2,884	3,417	1,196,883	1,250,094	77,594	129,466
Ohio	23,833	11,975	5,248,481	3,822,580	5,462	3,356
Rochester	381,667	244,502	428,507	451,317	12,982	245
St. Lawrence	1,205,817	731,269	1,919,168	1,274,181	14,795	8,998
Vermont	18,048	7,024	27,149	5,640	1,548	8,073
Maine & New H.	774	725	218	1,393	308	2,466
Massachusetts	878	636	15,425	25	.....	.....
Connecticut	.....	30	.....	74	.....	.....
Wisconsin	.....	.....	.....	100	.....	.....
Total to Canada	3,938,559	2,296,333	11,758,634	9,677,320	203,251	366,828
Total	4,179,812	2,365,187	20,660,933	11,073,112	274,878	456,733

Totals include small tonnage from Porto Rico, Alaska and Hawaii.

Cambria & Indiana Tonnage.

The records of the U. S. Geological Survey show that approximately 2,292,700 tons of bituminous coal was shipped over the lines of the Cambria & Indiana RR. in the State of Pennsylvania in 1920, and about 1,720,400 tons in 1921. These figures are subject to possible revision.

Coal Freight Rates

We quote below, as a matter of record, the new freight rates from certain southwestern Pennsylvania districts, as reported by the Connellsville "Courier."

TO EASTERN POINTS Rate per Gross Ton of 2,240 lbs.	Pittsb'g (9)	Connellsville, Westmoreland, Fairmont (8)	Originating G'burg (7)	District Latrobe (6)
Baltimore, Md. (Track Deliv.)	$3.24	$3.09	$2.94	$2.84
Chester, Pa. (P. R. R.)	3.24	3.09	2.94	2.84
Chester, Pa. (P. & R.)	3.24	3.09	2.94	2.84
Harrisburg, Pa. (P. R. R.-P. & R.)	2.73	2.58	2.43	2.33
Johnstown, Pa. (B. & O.)	1.39	1.39		
*Johnstown, Pa. (P. R. R.)	1.64	1.64		
Lebanon, Pa. P. R. R. and P. & R.	3.11	2.96	2.81	2.71
New York, N. Y. (37th St.)	3.49	3.34	3.19	3.09
New York, N. Y. (Bklyn.)	3.62	3.47	3.32	3.22
Philadelphia	3.24	3.09	2.94	2.84
Sparrows Point	3.24	3.09	2.94	2.84
Steelton, Pa.	2.73	2.58	2.43	2.33
South Bethlehem, Pa.	3.36	3.21	3.06	2.96
Syracuse, N. Y.	3.36	3.21	3.06	2.96
To ATLANTIC PORTS via P. R. R.				
Greenwich, local	3.24	3.09	2.94	2.84
Greenwich, export	2.72	2.47	2.42	2.32
South Amboy, F. O. B. vessels	3.14	2.99	2.84	2.74
Harsimus Cove	3.19	3.04	2.89	2.79
Greenville	3.19	3.04	2.89	2.79
Canton, Balto., local	3.24	3.09	2.94	2.84
Canton, Balto., export	2.65	2.50	2.35	2.25
To ATLANTIC PORTS via B. & O.				
St. George Coal Piers	2.99	3.34		
St. George for Export	3.14	2.99		
Philadelphia, Local	3.24	3.09		
Philadelphia for Export	2.72	2.47		
Curtis Bay, Local	3.24	3.09		
Curtis Bay for Export	2.65	2.50		

*The rate from points on the Monongahela Railway in the Fairmont group south of the Pennsylvania State line to Johnstown is $1.76 per net ton. Rates to Johnston from Greensburg and Latrobe groups apply specifically from point of origin to destination.

The Connellsville rate applies to shipments from points on the Southwest Branch of the Pennsylvania railroad south of Ruffsdale; from points on the Pittsburg, Virginia & Charleston and points on the Monongahela River railroad.

The Fairmont rate on shipments via the Baltimore & Ohio applies to shipments from points east of Suterville, Pa.; from points on the Smithfield & Masontown Branch and from the Fairmont Region of West Virginia.

TO WESTERN POINTS. Per Net Ton of 2,000 Lbs.	Pittsburgh Group (1)	Originating District—Upper C'ville (2)	Originating District—Lower C'ville (3)
Canton, O.	$1.59	$1.65	$1.84
Chicago, Ill.	3.09	3.09	3.09
Cleveland, O.	1.84	1.90	1.99
Columbus, O.	1.89	2.02	2.14
Detroit, Mich.	2.58	2.58	2.58
Indiana Harbor, Ind.	3.09	3.09	3.09
Toledo, O.	2.39	2.39	2.39
Youngstown, O.	1.34	1.42	1.58
Lake Ports	1.66	1.72	1.81
To CANADIAN BASING POINTS.			
Buffalo, N. Y.	2.24	2.39	2.39
Port Maitland, Ont.	2.24	2.39	2.39

These rates apply in a general way to shipments from the territory described. There are, however, numerous extensions to the specific rates quoted and in each case before applying the rate as a basis for freight charges the shipper or consignee should determine the exact location of the mine from which the business will move, then refer to the Tariff naming the rate in question.

The Pittsburgh District includes points east as far as Latrobe and south on the Southwest Branch to and including Ruffsdale; south to, but not including Brownsville on the Pittsburg, Virginia & Charleston railroad, eastward to Dawson on the Baltimore & Ohio railroad, and eastward to Dickerson Run and southwest to and including Brownsville on the New York Central lines.

The Connellsville District includes points on the Southwest Branch of the Pennsylvania railroad south of Ruffsdale; on the Pittsburg, Virginia & Charleston except Braznell and all Monongahela River railroad points; New York Central points east of Dickerson Run, including Connellsville Transfer, and points on the Baltimore & Ohio, Dawson to Point Marion, Pa.

Headquarters of Pennsylvania Mine Inspectors.

In connection with the district tonnages of Pennsylvania, it might be well to state the places at which the mine inspectors make their headquarters, as this will give an idea as to the location of the various districts.

Joseph Walsh, Chief Department of Mines, Harrisburg.

Anthracite: 1st, Forest City; 2d, Carbondale; 3d, 4th, 5th and 6th, Scranton; 7th, Taylor; 8th, Pittston; 9th, West Pittston; 10th and 11th, Kingston; 12th and 13th, Wilkes-Barre; 14th, Nanticoke; 15th and 16th, Hazleton; 17th, Lansford; 18th, Coaldale; 19th, Pottsville; 20th, Mahanoy City; 21st, Shenandoah; 22d, Centralia; 23d, Mount Carmel; 24th, Shamokin; 25th, Lykens.

Bituminous: 1st, Monongahela; 2d, Latrobe; 3d, Mercer; 4th, Du Bois; 5th, Uniontown; 6th, Johnstown; 7th, Crafton; 8th, Philipsburg; 9th, Connellsville; 10th, Altoona; 11th, Greensburg; 12th, Punxsutawney; 13th, Johnstown; 14th, Freeport; 15th, Patton; 16th, Brownsville; 17th, Pittsburgh; 18th, Tyrone; 19th, Irwin; 20th, Somerset; 21st, Charleroi; 22d, Dravosburg; 23d, Masontown; 24th, Johnstown; 25th, Indiana; 26th, Bridgeville; 27th, Belle Vernon; 28th, Punxsutawney; 29th, Pittsburgh; 30th, Johnstown.

Coal Pier Capacities—Atlantic Ports.

New York.

	Kind of coal	Daily capacity		Hours
B. & O. RR.				
St. George	Bituminous	8,000	tons	24
Arlington	Bituminous	16,000	"	24
Berwind-White C. M. Co.				
Harsimus	Bituminous	10,000	"	10
C. RR. of N. J.				
Pier 18, Jersey City	Anthracite and Bituminous	25,000	"	10
Communipaw	Anthracite and Bituminous	1,500	"	10
Port Liberty	Bituminous	3,000	"	10
Elizabethport	Anthracite and Bituminous	10,000	"	10
D., L. & W. RR.				
Hoboken	Anthracite	15,000	"	10
Erie RR.				
Undercliff	Anthracite and Bituminous	12,500	"	16
L. V. RR.				
Perth Amboy	Anthracite	12,500	"	10
N. Y., O. & W. Ry.				
Weehawken	Anthracite	7,500	"	10
Pennsylvania RR.				
South Amboy	Anthracite and Bituminous	17,500	"	10
P. & R. Ry.				
Port Reading	Anthracite and Bituminous	22,500	"	22
Total New York		161,000	"	..

Philadelphia.

Pennsylvania RR.				
Greenwich	Anthracite and Bituminous	10,000	"	10
P. & R. Ry.				
Port Richmond	Anthracite and Bituminous	30,000	"	22
Total, Philadelphia		40,000	"	..

Baltimore.

B. & O. RR.				
Curtis Bay	Bituminous	50,000	"	24
Locust Point	Bituminous	3,500	"	24
Pennsylvania RR.				
Canton	Anthracite and Bituminous	12,000	"	20
West. Maryland Ry.				
Port Covington	Bituminous	20,000	"	10
Total, Baltimore		85,500	"	..

Norfolk and Newport News.

C. & O. Ry.				
Newport News	Bituminous	30,000	"	16
N. & W. Ry.				
Lamberts Point	Bituminous	40,000	"	16

Virginian Ry.				
Sewalls Point	Bituminous	25,000	"	16
Total, Hampton Roads		95,000	"	..
Charleston.				
Southern Ry.	Bituminous	15,000	"	24
Total, Charleston		15,000	"	..
Grand Total		396,500		

Philadelphia & Reading's Bituminous Tonnage.

Shipments of bituminous coal, paying revenue, over the Philadelphia & Reading Ry. during 1922 and five previous years, in gross tons, were:

Month	1917	1918	1919	1920	1921	1922
January	1,684,202	1,400,157	1,485,159	2,109,271	1,804,413	1,120,527
February ...	1,327,151	1,362,702	1,202,085	1,430,303	1,238,237	1,547,334
March	1,790,199	1,940,911	1,141,463	1,407,882	1,310,357	1,742,560
April	1,853,137	1,880,287	1,345,075	1,590,552	1,132,870	989,039
May	1,723,640	1,540,880	1,592,268	1,798,507	1,206,890	755,558
June	1,755,998	2,140,440	1,538,397	1,542,451	1,217,580	831,530
July	1,778,024	2,122,620	2,118,877	1,820,642	1,122,832	581,203
August	1,645,642	1,995,289	2,352,234	1,956,565	1,290,104	842,369
September ..	1,782,684	1,832,142	2,561,379	2,092,759	1,266,364	1,333,362
October	1,711,458	1,866,735	2,982,529	2,159,019	1,481,533	1,528,694
November ..	1,703,231	1,681,789	1,112,823	2,070,579	1,334,318	1,551,411
December ...	1,462,974	1,735,194	1,389,151	2,180,860	1,160,353	1,712,081
Total ...	20,218,340	21,499,147	20,821,940	22,359,390	15,526,436	14,535,668

None of this tonnage originates on the Reading, being turned over to the P. & R. by the New York Central, B. & O. and Western Maryland for the most part at such points as Newberry Junction, near Williamsport, Philadelphia and Shippensburg, the latter junction having developed notably in recent years with the upbuilding of the Western Maryland line.

Coal Exports to Panama.

						Aver. Price			
Month	1918	1919	1920	1921	1922	1919	1920	1921	1922
January	34,400	6,135	34,067	51,452	9,625	$4.45	$5.97	$7.39	$6.00
February ..	42,332	8,661	30,692	47,469	....	4.69	6.05	7.99	...
March	21,959	5,290	18,306	19,657	....	4.77	5.97	8.00	...
April	70,870	19,088	19,048	19,829	9,390	4.75	7.00	7.04	6.00
May	50,108	....	....	....	6,477	...	...	...	6.00
July	55,656	....	9,899	18,149	7,025	...	8.10	6.00	6.00
June	50,871	....	10,167	8,522	19,101	...	8.00	7.11	6.00
August	56,342	....	....	9,611	9,595	...	...	6.00	6.00
September .	94,795	2,745	....	9,606	19,163	6.00	...	6.00	6.00
October	17,605	5,396	10,741	19,229	9,485	6.00	8.05	6.00	6.00
November .	3,188	8,482	3,644	9,627	9,622	6.03	8,97	6.00	6.00
December ..	6,000	16,300	18,478	9,678	4,975	5.95	8.94	5.99	5.76
Total	504,126	72,097	155,042	122,829	104,458	...	...	...	...

Bunker Tonnage at Principal Atlantic Ports.

Tonnage of coal loaded on board vessels engaged in the foreign trade from New York, Philadelphia, Baltimore and Hampton Roads ports for bunker use in the years specified was:

Month	New York		Philadelphia		Baltimore		Hamp. Roads	
	1921	1922	1921	1922	1921	1922	1921	1922
Jan. ..	291,233	156,224	28,664	18,681	46,545	15,009	238,113	132,388
Feb ..	233,586	146,713	23,768	21,365	39,664	20,015	180,820	121,180
Mar. .	269,441	163,722	33,724	29,801	28,770	17,680	185,385	134,186
Apr. .	290,904	142,078	33,840	24,095	44,852	22,971	259,856	143,741
May .	273,944	179,256	33,857	16,565	46,846	10,871	335,189	123,524
June .	278,566	146,562	30,422	10,155	57,735	9,298	337,419	106,507
July .	287,141	132,549	30,202	8,860	44,427	6,721	292,521	88,411
Aug. .	241,638	95,103	33,397	6,588	22,685	8,672	217,369	71,178
Sept. .	241,959	107,727	16,763	9,904	17,483	5,291	125,609	48,093
Oct. .	193,646	116,160	20,800	9,787	11,393	8,782	137,123	61,093
Nov. .	175,635	177,133	27,085	15,984	14,977	9,179	101,234	75,146
Dec. .	203,760	144,064	22,126	11,864	20,025	8,484	126,263	75,146
Total	2,981,553	1,706,791	334,648	184,694	395,402	154,973	2,536,901	1,192,012

Rates on Lake Cargo Coal, F. O. B., Cars on Docks at Various Ports, Also Handling Charge.

We show below in cents per ton the rates charged on lake cargo coal from various districts shipping to the Lake Erie loading ports:

Year	No. 8 Hocking Cambridge	Middle	Youghiogheny Pittsburgh Moundsville	Connellsville Klondike	Fairmount	Cumberland Piedmont Gauley	Meyersdale	Kanawha Thacker Logan	Pocahontas New River
1910	85	70	88	96¾	96¾	115	115	97	112
1911	85	70	88	96¾	96¾	115	115	97	112
1912	75	60	78	90	90	112	112	97	112
1913	75	60	78	90	90	112	112	97	112
1914	75	60	78	90	90	112	112	97	112
1915	75	60	78	90	90	112	112	97	112
1916	75	60	78	90	90	112	112	97	112
1917	90	75	93	105	105	127	127	112	127
1917, Aug	90	75	93	99	108	120	115	118	133
(6/25) 1918.....	127	112	130	136	145	157	152	155	170
(8/26) 1920	183	168	186	192	201	213	208	211	226
(7/1) 1922	163	148	166	172	181	193	188	191	205

Handling charge—5 cents net ton increased to 6 cents net ton in September and October, 1917. Figures given are rates per net ton.

The Interstate Commerce Commission allowed a reduction of 28 cents per ton during the summer months of 1921 to stimulate lake trade.

Buffalo, Rochester & Pittsburgh Ry. Shipments.

Shipments of bituminous coal and coke over the Buffalo, Rochester & Pittsburgh Ry. during 12 months, separately and collectively, 1922 and six previous years, were:

Month	1916	1917	1918	1919	1920	1921	1922
Jan.	954,756	881,154	824,319	839,886	751,666	444,559	421,775
Feb.	907,872	684,083	865,782	523,973	584,715	357,559	500,715
Mar.	904,989	971,337	1,133,596	572,637	854,948	379,387	649,445
Apr.	700,704	835,949	1,025,153	354,716	843,338	251,589	185,929
May	731,537	955,056	1,005,916	418,432	818,422	325,996	200,396
June	749,964	990,084	1,060,890	436,650	836,775	334,738	201,742
July	800,393	898,946	1,061,389	600,996	988,540	314,567	151,804
Aug.	924,738	998,488	1,080,438	739,066	922,462	374,921	199,428
Sept.	924,645	921,974	973,363	810,782	898,449	358,901	531,506
Oct.	872,874	1,054,511	906,581	932,285	977,441	439,784	998,215
Nov.	838,278	981,575	754,639	220,929	855,562	374,098	1,112,741
Dec.	833,278	895,354	957,532	435,326	921,773	392,022	1,085,536
Total,	10,194,488	11,078,511	11,658,598	6,875,678	10,254,960	4,349,308	6,239,232

The above figures include company tonnage, also coal received from connecting lines. All net tons.

Coke shipments in 1920, 1921 and 1922 were:

Month	1920	1921	1922	Month	1920	1921	1922
January	44,391	28,029	26,455	August	53,489	8,535	5,541
February	55,942	13,283	21,915	September	49,618	6,632	6,415
March	62,256	5,346	23,906	October	56,033	15,217	12,218
April	43,147	3,037	22,767	November	45,990	23,925	14,405
May	50,630	4,364	12,162	December	33,034	27,811	14,908
June	50,163	6,274	9,044	Total	507,383	154,123	177,021
July	52,699	6,940	7,285				

Huntingdon & Broad Top Shipments.

Shipments of bituminous coal over the Huntingdon & Broad Top Mountain RR., for revenue and company use, during 1921 and 1922 were:

Month	Revenue		Company		Total	
	1921	1922	1921	1922	1921	1922
January	79,059	40,910	3,100	1,776	82,159	42,686
February	69,355	49,490	3,393	2,861	72,748	52,351
March	63,020	58,129	3,177	3,327	66,197	61,456
April	74,880	18,109	573	162	55,453	18,271
May	62,838	13,200	1,371	3,422	64,209	16,622
June	43,042	27,529	1,567	1,121	44,609	28,650
July	41,827	27,792	1,555	1,572	43,282	29,364
August	40,350	46,326	1,580	2,542	41,930	48,868
September	40,205	110,723	1,697	2,319	41,902	113,042
October	50,201	110,227	2,510	2,462	52,711	112,689
November	38,364	89,082	1,574	3,022	39,938	92,104
December	36,177	81,276	2,570	2,463	38,747	83,739
Total	619,318	672,793	24,667	27,049	643,985	699,842

Western Maryland Ry. Shipments.

Shipments of bituminous coal over the Western Maryland Ry., for revenue and company use, during 1921 and 1922 were (net tons):

Month	Revenue		Company		Total	
	1921	1922	1921	1922	1921	1922
January	626,731	628,150	48,898	54,734	675,629	682,884
February	538,955	708,967	45,715	46,281	584,670	755,248
March	509,055	754,967	38,739	44,816	547,794	799,783
April	509,836	367,939	35,332	32,836	545,168	400,775
May	543,698	280,843	40,512	33,500	584,210	314,343
June	556,735	376,575	37,082	31,577	593,817	408,152
July	603,202	343,817	37,013	34,756	640,215	378,573
August	489,839	528,001	35,818	49,312	525,657	577,313
September	501,599	692,494	34,094	58,198	535,693	750,692
October	622,964	760,032	43,547	59,991	666,511	820,023
November	493,313	692,386	39,006	58,461	532,319	750,847
December	528,359	760,099	43,151	64,706	571,510	824,805
Total	6,524,286	6,894,270	478,907	569,168	7,003,193	7,463,438

Total tonnage of bitmuinous coal originated on Western Maryland Ry. and G. C. & C. RR. for calendar years 1921 and 1922 (gross tons):

Month	W. Va. Div.		G. C. & C.		Total	
	1921	1922	1921	1922	1921	1922
January	294,647	228,012	9,500	11,512	304,147	239,524
February	243,461	223,520	11,020	12,753	254,481	236,273
March	235,220	226,326	10,171	12,249	245,391	238,575
April	237,780	94,140	9,014	3,723	246,794	97,863
May	191,869	105,829	11,499	660	203,368	106,489
June	217,531	93,858	7,923	.....	225,454	93,858
July	183,322	105,408	13,729	.....	197,051	105,408
August	161,634	166,318	16,355	.....	177,989	166,318
September	169,733	289,864	17,182	473	186,915	290,337
October	192,118	356,180	23,018	2,359	215,136	358,539
November	146,117	333,743	11,135	4,456	157,252	338,199
December	171,451	293,840	13,153	9,592	184,604	303,432
Total	2,444,883	2,517,038	153,699	57,777	2,598,582	2,574,815

Exports of Briquets.

Exports of briquets from the United States in 1922 were:

Month	1922	Month	1922	Month	1922
January	441	May	114	September	519
February	293	June	100	October	1,023
March	414	July	118	November	748
April	126	August	1,106	December	1,293
				Total	6,297

Tidewater Bituminous Shipments for Year 1922.

Destination *Year 1922*	New York	Philadelphia	Baltimore	Ham. Roads	Charleston	Total
New England...	826,000	284,000	606,000	9,088,000	88,000	10,892,000
Exports	3,000	156,000	114,000	1,194,000	146,000	1,613,000
Bunker	2,158,000	273,000	198,000	1,895,000	53,000	4,577,000
Inside capes.....	.....	1,438,000	960,000	934,000	.....	3,332,000
Other tonnage...	4,453,000	7,000	39,000	3,515,000	45,000	8,059,000
Total.....	7,440,000	2,158,000	1,917,000	16,626,000	332,000	28,473,000

Summary of Tidewater Bituminous Business for Four Years—By Ports:

New York	14,234,000	14,825,000	11,912,000	7,440,000
Philadelphia	4,411,000	6,191,000	3,641,000	2,158,000
Baltimore	3,467,000	7,831,000	4,136,000	1,917,000
Hampton Roads.....	14,630,000	24,026,000	17,242,000	16,626,000
Charleston	320,000	911,000	392,000	332,000
All ports	37,062,000	53,784,000	37,323,000	28,473,000

Summary of Tidewater Bituminous Business—By Destinations:

Coastwise to				
New England	8,386,000	10,457,000	8,859,000	10,892,000
Exports	8,292,000	21,778,000	9,633,000	1,613,000
Bunker	6,874,000	9,171,000	8,135,000	4,577,000
Inside capes	3,438,000	3,410,000	3,251,000	3,332,000
Other tonnage.....	10,072,000	8,968,000	7,445,000	8,059,000
All destinations.....	37,062,000	53,784,000	37,323,000	28,473,000

All figures are in net tons.

Carolina, Clinchfield & Ohio Ry. Tonnage.

During the year 1922 and six years previous shipments of coal over the Carolina, Clinchfield & Ohio Ry., by months, were:

Month	1916	1917	1918	1919	1920	1921	1922
January ..	181,189	269,181	212,211	328,107	389,927	285,725	280,411
February .	198,735	212,375	269,472	272,558	298,106	207,409	307,343
March	224,386	236,303	239,709	258,225	339,469	255,602	321,819
April	185,292	230,407	213,103	243,040	334,681	251,445	355,740
May	186,332	237,403	224,765	365,597	310,006	237,442	354,777
June	182,064	235,208	236,207	324,405	335,750	235,315	375,620
July	136,118	191,824	239,986	348,919	358,543	291,224	281,122
August ...	153,053	247,392	219,936	326,959	376,615	285,646	269,908
September .	189,533	220,906	282,325	371,680	379,507	300,651	290,156
October ..	224,216	226,036	279,441	300,629	443,403	325,339	255,672
November .	222,263	208,719	251,581	367,404	374,375	352,466	348,919
December .	238,461	195,735	278,133	369,979	321,045	298,000	279,575
Total ...	2,322,642	2,721,487	2,946,869	3,877,502	4,261,427	3,326,264	3,821,062

On the New York Central Railroad the annual fuel bill is in the neighborhood of $30,000,000. For all the New York Central Lines it is approximately $60,000,000, and the annual cost per locomotive owned is from $10,000 to $12,000.

Coal Imports by South America.

We give below data from official sources relative to shipments of coal from the United States and from Great Britain to the principal countries of South America during a term of years. It is interesting to note how the tonnage from this country has grown since the outbreak of the war:

From United States.

To	1916	1917	1918	1919	1920	1921	1922
Argentina	921,969	317,563	178,899	483,389	1,746,007	746,439	78,971
Brazil	782,094	685,142	559,089	642,109	966,029	527,225	152,976
Chile	295,017	354,340	336,069	123,860	494,121	150,844	46,916
Peru	45,824	18,304	24,249	45,819	35,382	28,152	13,828
Paraguay	.....	.....	.....	.....	6,945	.....	.....
Uruguay	171,060	67,411	256,434	194,197	267,807	88,390	.....
Venezuela ...	3,430	944	2,417	496	2,825	6,649	23
Total.....	2,219,394	1,433,704	1,357,157	1,489,870	3,519,116	1,547,699	292,314

From Great Britain.

To	1916	1917	1918	1919	1920	1921	1922
Argentina ...	728,412	309,216	258,110	639,089	273,668	887,344	2,021,092
Brazil	196,973	237,516	169,982	189,205	158,144	242,223	1,013,221
Chile	24,194	13,154	9,000	7,294	7,122	22,624	84,311
Peru	.....	.....	.....	.....	.....	7,244	21,481
Uruguay	179,472	199,692	162,417	184,813	117,480	221,817	502,533
Total.....	1,119,051	759,578	599,509	1,020,401	556,414	1,381,249	3,642,638

Rail Shipments of Ohio Coal.

The following tabulation shows the tonnage in recent years of several of the railroads in the Ohio Coal Traffic Association transporting coal from Ohio mines to various destinations:

Railroads	1919	1920	1921	1922
Hocking Valley	3,768,335	6,050,208	2,561,056	2,361,810
Toledo & Ohio Central.....	2,313,146	2,971,348	2,186,568	1,607,698
Baltimore & Ohio.....	2,727,363	3,987,742	2,968,702	2,154,152
Wheeling & Lake Erie.....	3,232,795	4,701,124	3,835,739	2,837,447
Cleveland, Lorain & Wheeling.....	3,954,340	4,801,125	3,977,765	2,610,532
Zanesville & Western	1,706,139	2,134,268	1,002,284	928,572
Pennsylvania Lines	6,176,852	6,968,869	6,018,427	3,990,738
New York Central	1,319,671	1,140,015	1,187,492	1,343,908
Kanawha & Michigan	426,681	804,341	501,589	441,117
Detroit, Toledo & Ironton	201,904	637,077	78,371	347,307
P. & W. Va. RR.....	571,555	907,151	163,254	865,902
B. & O. (OD) RR.....	261,643	593,623	181,079	301,663
B. & O. (TD) RR.....	122,409	231,608	5,487	54,510
F. V. RR.....	97,803	140,150	143,991	93,917
N. & W. Ry.....	10,687	37,498	4,553	38,828
Total, net tons.....	26,891,323	37,106,147	24,816,357	19,978,401

New York Harbor Piers—Tonnage 1922.

Piers	Railroad	Anthracite	Bituminous	Total
Arlington	Balt. & Ohio	.....	793,874	793,874
Communipaw	C. RR. of N. J.	135,127	103,259	238,386
Elizabethport	C. RR. of N. J.	624,219	31,804	656,023
Hoboken	D. L. & W.	1,255,355	.....	1,255,355
Perth Amboy	Lehigh Valley	1,682,350	.....	1,682,350
Pier 18 Jer. City	C. RR. of N. J.	916,840	1,120,460	2,037,300
Port Johnson	C. RR. of N. J.	.....	.....	.....
Port Liberty	C. RR. of N. J.	6,511	658,525	665,036
Port Reading	Phila. & Reading	1,868,080	777,948	2,645,028
South Amboy	Pennsylvania	569,910	2,102,552	2,672,462
Undercliff	Erie	1,452,679	18,296	1,470,975
Weehawken	Ontario & West.	924,909	.....	924,909
	1921			
Arlington	Balt. & Ohio	.....	1,165,583	1,165,583
Communipaw	C. RR. of N. J.	237,076	74,791	311,867
Elizabethport	C. RR. of N. J.	865,234	158,848	1,024,083
Hoboken	D. L. & W.	2,122,908	.....	2,122,908
Perth Amboy	Lehigh Valley	2,163,748	.....	2,163,748
Pier 18 Jer. City	C. RR. of N. J.	950,478	1,637,000	2,587,478
Port Johnson	C. RR. of N. J.	400,161	.....	400,161
Port Liberty	C. RR. of N. J.	.....	604,580	604,580
Port Reading	Phila. & Reading	1,631,850	1,152,315	2,784,165
South Amboy	Pennsylvania	589,689	3,533,172	4,122,172
Undercliff	Erie	1,855,929	29,464	1,885,383
Weehawken	Ontario & West.	1,073,287	.....	1,073,287

St. Lawrence District Coal Exports.

Exports of coal and coke from the St. Lawrence customs district, by months, during calendar years 1921 and 1922, were:

Month	Anthracite		Bituminous		Coke	
	1921	1922	1921	1922	1921	1922
January	86,587	57,871	402,196	113,509	782	677
February	96,368	86,999	136,990	170,457	1,047	683
March	77,338	67,056	123,719	287,217	1,476	698
April	106,749	53,079	106,619	138,217	1,604	712
May	120,951	21,989	118,504	11,579	885	303
June	143,665	14,389	167,495	12,087	718	329
July	96,195	3,247	133,451	8,393	976	260
August	105,701	6,959	155,094	7,535	1,671	1,029
September	77,107	29,148	138,293	17,918	973	1,471
October	95,973	102,905	168,820	82,369	950	515
November	90,570	143,665	132,374	162,985	2,944	1,064
December	108,573	143,962	135,613	261,895	769	1,257
Total	1,205,817	731,269	1,919,168	1,274,181	14,795	8,998

Virginian Railway Shipments.

Shipments of bituminous coal, for revenue and company use, over the Virginian Ry. during the calendar years 1921 and 1922 were:

Month	Revenue		Company		Total	
	1921	1922	1921	1922	1921	1922
January	564,630	470,040	39,011	35,155	603,641	505,195
February	333,518	534,907	33,828	36,742	367,346	571,649
March	358,220	662,815	28,361	43,178	386,581	705,993
April	478,166	491,406	31,864	36,088	510,012	527,494
May	688,812	650,180	42,760	38,386	731,572	688,566
June	658,461	682,746	36,766	36,495	695,227	719,241
July	480,656	479,823	31,537	30,505	512,193	510,328
August	439,761	466,245	36,518	32,910	476,279	499,155
September	386,913	458,396	23,676	34,856	410,589	493,252
October	518,108	575,494	39,751	40,588	557,859	616,082
November	447,710	538,497	34,752	43,848	482,462	582,345
December	327,365	543,368	32,000	44,049	359,345	587,417
Total	5,682,320	6,553,917	410,806	452,800	6,093,126	7,006,717

Pittsburg, Shawmut & Northern RR. Shipments.

Shipments of bituminous coal over the Pittsburg, Shawmut & Northern RR., for revenue and company use, during 1921 and 1922 were:

Month.	Revenue		Company		Total	
	1921	1922	1921	1922	1921	1922
January	58,976	48,375	3,849	3,247	62,825	51,625
February	48,116	62,002	3,168	3,289	51,284	65,291
March	49,016	58,661	3,114	2,655	52,130	61,316
April	42,269	8,949	2,613	2,637	44,882	11,586
May	40,812	9,356	2,349	1,827	43,161	11,183
June	40,417	15,605	2,066	2,130	42,483	17,735
July	37,500	13,717	1,970	2,041	39,470	15,758
August	37,800	35,177	2,149	1,631	39,949	36,808
September	33,062	114,410	2,450	4,376	35,512	118,786
October	44,232	96,132	3,207	3,498	47,439	99,630
November	38,081	95,098	2,725	4,592	40,806	109,690
December	37,027	99,804	2,659	4,958	39,686	104,762
Total	507,308	657,286	32,319	36,881	539,627	694,167

Explosives Used in Coal Mining.

The coal mining industry is always the largest consumer of black powder and permissible explosives, the consumption usually comprising about 85 per cent of the entire amount manufactured. In 1921 the coal mines used 5,613,435 kegs, or 140,335,875 pounds of black powder, 34,231,542 pounds of "high" explosives, and 38,055,650 pounds of permissibles, representing decreases of 36 per cent, 8 per cent, and 16 per cent, respectively, as compared with 1920.

Coal Dumped at Lake Erie Ports.

We show below tonnage dumped at railroad piers at Lake Erie ports in past two years:

(In Net Tons)

Ports	Railroads	1921 Cargo	1921 Fuel	1921 Total	1922 Cargo	1922 Fuel	1922 Total
Toledo	H. V.	4,426,687	116,157	4,542,844	3,241,786	92,597	3,334,383
	T. & O. C.	1,106,251	32,319	1,138,570	860,814	27,965	888,779
	B. & O.	2,561,015	78,085	2,639,100	2,912,587	77,864	2,990,451
Sandusky	Penna.	1,853,148	52,138	1,905,286	2,794,264	99,730	2,893,994
Huron	W. & L. E.	1,577,500	45,468	1,622,968	430,222	17,587	447,809
Lorain	B. & O.	2,546,216	103,113	2,649,329	1,836,014	91,529	1,927,543
Cleveland	Penna.	2,062,722	91,910	2,154,632	1,056,464	93,239	1,149,703
	Erie	359,981	12,782	372,763	381,903	14,464	396,367
Ashtabula	N. Y. C.	1,125,792	62,214	1,188,006	1,515,608	88,464	1,604,072
	Penna.	2,300,210	78,097	2,378,307	1,674,618	90,038	1,764,656
Conneaut	B. & L. E.	1,474,202	20,603	1,494,805	1,618,192	63,317	1,681,509
Erie	Penn., W.	770,091	27,030	797,121	199,670	72,387	272,057
	Penn., E.	248,565	39,153	287,718			
Totals		22,412,380	759,069	23,171,449	18,522,142	829,181	19,351,323

There was no tonnage dumped at Fairport in 1921 or 1922.

Lake Erie Ports' Monthly Shipments.

Total tonnage, cargo and bunker, by months, was as follows:

Month	1918	1919	1920	1921	1922
January	.....	.....	.....	10,600	.....
February	.....	.....	.....	103,377	9,277
March	.....	.....	.....	235,238	204,040
April	891,046	1,133,203	329,202	939,945	621,236
May	3,194,198	3,800,837	1,321,020	3,665,145	1,341,392
June	3,539,352	4,270,462	2,221,210	4,795,383	1,535,877
July	4,234,305	3,983,521	2,860,366	3,669,131	832,697
August	4,996,930	2,820,280	4,593,781	3,040,452	616,762
September	4,851,198	2,505,827	4,138,533	2,295,580	4,558,464
October	5,043,887	3,229,794	4,693,839	2,820,411	4,770,639
November	2,637,326	1,064,468	3,235,623	1,526,630	4,007,995
December	.....	.....	268,500	69,557	524,377
Total	29,388,242	22,750,392	23,667,138	23,171,449	19,351,323

Shipments by Ports.

Toledo	10,338,757	7,936,406	7,483,522	8,320,514	7,213,613
Sandusky	2,448,257	1,442,028	1,630,847	1,905,286	2,893,994
Huron	2,169,727	1,488,516	1,958,446	1,622,968	447,809
Lorain	3,434,994	2,871,450	3,488,182	2,649,329	1,927,543
Cleveland	3,533,513	2,800,425	1,859,177	2,527,395	1,546,070
Fairport	317,548	29,646	.....	.....	.....
Ashtabula	3,699,048	3,873,791	3,959,855	3,566,315	3,368,728
Conneaut	2,245,892	1,382,719	2,446,960	1,494,805	1,681,509
Erie	1,200,470	925,311	840,039	1,084,839	272,057
Total	29,388,242	22,750,392	23,667,138	23,171,449	19,351,323

Distribution of Cargo Coal from Lake Erie.

Lake Superior Ports	1919	1920	1921	1922
Duluth Superior and Two Harbors	7,806,277	7,774,764	8,679,763	5,406,912
Ashland-Washburn	589,705	604,062	514,545	457,944
Copper Range (1)	776,194	641,039	572,738	602,216
Marquette	233,313	310,422	140,596	233,338
Fort William, Port Arthur and Jackfish	1,533,084	906,978	1,968,322	1,890,918
Other Lake Superior Ports	61,167	58,074	37,750	11,412
Totals	10,999,740	11,295,339	11,913,714	8,602,740
Lake Michigan Ports				
Milwaukee-Racine	3,256,650	2,578,085	2,759,327	2,482,401
South Chicago, Ind. Harbor and Gary	1,811,310	1,180,749	1,698,614	1,494,641
Sheboygan to Escanaba (1)	1,413,722	1,500,905	1,493,721	1,341,781
Other Lake Michigan ports	202,565	199,780	220,951	166,968
Totals	6,684,247	5,459,519	6,172,613	5,485,791
St. Mary's River ports				
Detour and Lime Island	196,664	397,579	244,943	584,684
Sault Ste. Marie, Can.	809,548	1,092,428	751,839	413,494
Sault Ste. Marie, American	150,835	164,915	90,814	91,548
Totals	1,157,047	1,654,922	1,087,596	1,089,726
Lake Huron ports	297,957	211,166	232,483	197,648
Detroit & St. Clair River ports	713,188	1,288,970	1,137,140	1,112,325
Lake Erie Ports				
Buffalo-Fairport and Toledo	67,101	53,758	244,116	1,078,654
Other ports (regular)	48,384	43,422	91,644	166,898
Totals	115,485	97,180	335,760	1,245,552
Georgian Bay ports	751,583	1,008,473	766,149	574,103
Welland Canal, Lake Ontario and St. Lawrence River ports	994,094	1,392,786	766,925	214,257
Grand total, net tons	21,713,341	22,408,355	22,412,380	18,522,142

(1) Hancock, Houghton, Hubbell, Lake Linden, Portage, Torch Lake, Escanaba, Green Bay, Marinette, Menominee, Manitowoc and Sheboygan.

Frick Wage Rates.

Wage rates of the H. C. Frick Coke Co., in effect August 23, 1922, are: Mining, loading room, rib coal per 100 bushels, $3.24; loading heading coal, 100 bushels, $3.56; loading wet heading coal, 100 bushels, $3.85; loading machine coal, 100 bushels, $2.10; drawing coke, hand, 100 bushels $2.16; leveling hand, per oven 31 cents; drivers, rope riders, shafts and slopes $7.55 per day; drivers, rope riders, drift, per day, $7.50; cagers, shafts and slopes, per day, $7.50; cagers, drift, per day, $7.50; fire bosses, per day, $6.30; tracklayers, blasters and timbermen, shafts and slopes, per day, $5.05; tracklayers, blasters and timbermen, drift, per day, $7.50; assistant tracklayers, blasters and timberman, per day, $6.75; inside laborers, per day, $6.55; outside laborers, per day, $3.60.

BITUMINOUS WAGE ADVANCES

How Basic Rate in the Hocking Field Has Gone Up Since 1892.

The rate paid for pick mining in the Hocking district has long been the basing rate for the Central Competitive field. For that reason a record of the changes in the Hocking rate during the past quarter century is an accurate index to the trend of wages in the bituminous industry as a whole.

It is possible to present such a record through the courtesy of W. D. McKinney, secretary of the Southern Ohio Coal Exchange.

This shows that 1892, 1893, and up to February 17, 1894, the rate was 70 cents per net ton for screened lump coal.

The rate for subsequent years was as follows:

February 17, 1894, to April 21, 1894, 50 cents.
June 11, 1894 (when strike ended) to June 1, 1895, 60 cents.
June 1, 1895, to October 1, 1895, 51 cents.
October 1, 1895, to March 1, 1896, 55 cents.
March 1, 1896, to October 1, 1896, 61 cents.
October 1, 1896, to January 1, 1897, 45 cents.
January 1, 1897, to strike, July 4, 1897, 51 cents.
September 13, 1897 (when strike ended) to April 1, 1898, 56 cents.
April 1, 1898, to April 1, 1900, 66 cents.
April 1, 1900, to April 1, 1903, 80 cents.
April 1, 1903, to April 1, 1904, 90 cents.
April 1, 1904, to April 1, 1906, 85 cents.
April 1, 1906, to April 1, 1908, 90 cents.

(A strike was in effect from April 1 to July 18, 1906, with some mines paying the demands and working.)

April 1, 1908, to April 1, 1910, 90 cents. (Renewal of the previous agreement.)

April 1, 1910, to April 1, 1912, 95 cents.
April 1, 1912, to April 1, 1914, $1.

In the latter year the U. M. W. insisted on a change from the screened-lump to the mine-run basis in figuring miners' wages.

A new agreement was entered into, effective July 15, 1914, and running until April 1, 1916, which fixed the rate for pick mining at 67.6 cents per ton, mine-run basis.

This was renewed for two years practically without change. The rate from April 1, 1916, to April 1, 1918, was to have been 67.64 cents.

Early in 1917, however, the miners demanded another advance and the agreement was revised on April 16 of that year, the new rate being 77.64 cents.

In the fall the men demanded another raise, and for a second time the contract was modified. The new agreement, entered into on October 29, 1917, called for a rate of 87.64 cents, and was to expire at the end of the war, or not later than April 1, 1920.

On October 21, 1918, Frank J. Hayes, president United Mine Workers, urged H. A. Garfield, United States Fuel Administrator, to authorize another increase in wages. This increase was denied by Dr. Garfield on October 26, 1918.

In 1919 the U. M. W. again demanded an increase and called for a joint meeting, at which time they made a series of 13 demands, asking for an increase of 60 per cent in wages, five days per week and six hours a day.

Representatives of the operators and miners met in Buffalo, September 25, 1919, and, again in Philadelphia, October 9th, and again at the call of Secretary of Labor Wilson in Washington on October 21st, at all of which meetings the operators and miners failed to agree, and on November 1st the U. M. W. went on strike. It lasted some six weeks.

The Bituminous Coal Commission was then appointed by the President of the United States and after a long hearing they formulated a new wage scale which was accepted by the operators and miners and became effective April 1, 1920, increasing day labor from $5 to $6, cutting and loading from 70 cents to 94 cents.

In June of 1920 the Illinois miners went on strike for an increase in day wage, which resulted in a call by President Wilson for a conference of the operators and miners of the Central Competitive Field which convened at Cleveland on August 13; after five days the conference could not agree and adjourned.

The subject was then taken up in the State district meetings, and Ohio operators came to an agreement with the miners on August 28, 1920, advancing the day wage $1.50, making the basic day wage $7.50, expiring April 1, 1922, and renewed in August, 1922, for the period to April 1, 1923, and in January a further agreement to April 1, 1924.

Central Pennsylvania Wage Increases.

Up to April 1st, 1900, the wages of the highest paid men working by the day in central Pennsylvania was $1.90. Motormen were paid $1.75. From 1901 to 1903 the standard rate was $2.25. In 1904 it was $2.40. In 1905 it was reduced to $2.27. In 1907 it was restored to $2.40. In 1910 and 1911 it was $2.53, remaining at that figure until April 1st, 1916, when it was raised to $2.77.

With the world war, higher wages ensued. The same class of rates was advanced in April, 1917, to $3.60. On November 1st, 1917, as a result of another demand on the part of the miners, wages were advanced to $5.00 a day. The national strike began November 1st, 1919, and lasted about six weeks, the men returning to work on a rate of $5.70 per day.

On April 1st, 1920, under the award of the Bituminous Coal Commission, the wage was advanced to $6.00. The miners, protesting against that decision, forced another increase on August 15th, 1920, to $7.50, so that in twenty years wages advanced from $1.90 per day to $7.50 per day. The rate for pick mining in the Central Pennsylvania district went from 50 cents per ton in 1900 to $1.2803 a ton, the present rate. The miners can, and do, earn at these rates from $150 to $350 per month.

Pennsylvania, in 1921, was by far the leading state in the consumption of explosives, having used 21,458,135 pounds of permissible explosives, 37,809,025 pounds of high explosives other than permissible, and 1,394,869 kegs of black blasting powder. West Virginia was second in the use of permissible explosives, with a consumption of 6,740,025 pounds; Illinois was third, with 3,169,854 pounds, and Alabama was fourth, with 2,580,053 pounds.

Northern West Virginia Wage Rates.

Rates for Mining Per Net Ton Coal Five Feet or Over.

Type of Work	Open Lights	Closed Lights
Pick mining:		
Room and pillar	$0.8760	$0.890
Entries	0.9360	0.950
Electric Machine Work:		
Loading, hand drilling, in entries	0.6470	0.660
Cutting, without drilling, in entries	0.1690	0.175
Loading, hand drilling, in rooms	0.6270	0.640
Cutting, without drilling, in rooms	0.1523	0.155
Loading, machine drilling, in entries	0.6270	0.640
Cutting, electric chain-machine drilling, in entries	0.1790	0.185
Loading, machine drilling, in rooms	0.6070	0.620
Cutting, electric chain-machine drilling, in rooms	0.1623	0.165

Rates for Mining Per Net Ton Coal Under Five Feet.

Type of Work	Open Lights	Closed Lights
Pick Work:		
Hand drilling, in room and pillar	$0.9500	$0.9640
Hand drilling, in entries	1.0650	1.0790
Loading, hand drilling, in entries	0.7575	.,....
Cutting, hand drilling, in entries	0.1948	0.2008
Loading, hand drilling, in rooms	0.7000	0.7130
Cutting, hand drilling, in rooms	0.1583	0.1610
Loading, machine drilling, in entries	0.7375	0.7500
Cutting, machine drilling, in entries	0.2048	0.2108
Loading, machine drilling, in rooms	0.6800	0.6930
Cutting, machine drilling, in rooms	0.1683	0.1710

Ohio Customs District Exports.

Exports of coal and coke from the Ohio customs district, by months, during calendar years 1921 and 1922 were:

Month	Anthracite		Bituminous		Coke	
	1921	1922	1921	1922	1921	1922
January	.....	.....	58,222	44,920	175	273
February	.....	.....	8,801	.....	....	..
March	.....	.....	12,775	35,049	....	...
April	11,469	3	244,450	85,201	128	109
May	5,358	.....	668,888	91,383	305	123
June	2,461	9	914,065	176,629	206	30
July	2,714	.....	845,818	122,756	182	...
August	13	.....	820,602	119,718	1,024	25
September	.....	.....	585,879	671,356	418	73
October	1,811	1,014	529,696	1,048,704	1,383	1,100
November	5	10,819	366,527	974,881	1,190	814
December	2	130	152,758	451,983	471	799
Total	23,833	11,975	5,248,481	3,822,580	5,462	3,356

ILLINOIS WAGE AGREEMENT

The wage agreement for Illinois mines, effective as of April 1, 1920 for two years, was executed and signed May 20, 1920, and again signed August 22, 1922, for a continuation until March 31, 1923. Following are the pick wage rates in the several districts of the state:

The prices for pick mined coal, per ton of 2,000 pounds, throughout the State of Illinois, shall be as follows:

First District.

Streator, Cardiff, Clark City, Fairbury and associated mines, including Toluca thick vein	$1.17
(Matter of clay parting at Streator referred for local settlement.)	
Third vein and associated mines, including third vein at Streator, including twenty-four inches of brushing	1.37
Wilmington and associated mines, including Bloomington thin vein, including brushing	1.42
Cherry, Bureau County, Middle Vein (Saint Paul Coal Company)	1.17
Blocmington thick vein	1.32
Pontiac, including twenty-four inches of brushing	1.42
Pontiac top vein	1.17
Marseilles	1.68
Morris, long wall, Wilmington conditions	1.59
Morris, room and pillar	1.74
Seneca, long wall (see local agreement)	1.52
Cornell, long wall, third vein conditions	1.37
Cornell, room and pillar	1.25

Second District.

Danville, Westville, Grape Creek and associated mines Vermilion County.	1.08

Third District.

Springfield, Dawson and associated mines	$1.87
Lincoln and Niantic	1.12
Colfax	1.12

Fourth District.

Mines on the C. & A., south of Springfield, to and including Carlinville; including Taylorville, Pana, Tower Hill, Litchfield, Hillsboro, Witt (Paisley), Divernon Pawnee, Nokomis and Kincaid	$1.08
Assumption, long wall, including twenty-four inches of brushing	1.34
Moweaqua, room and pillar	1.12
Decatur, long wall, present condition	1.23
Decatur, room and pillar	1.17

Fifth District.

Glen Carbon, Belleville and associated mines, to and including Percy, Pinckneyville, Willisville and Nashville	$1.08
Coal five feet and under	1.13

Sixth District.

DuQuoin, Odin, Sandoval, Centralia and associated mines	$1.04
Salem and Kinmundy	1.09

Seventh District.

Mt. Vernon	1.09
Jackson County	1.04
All coal five feet and under, five cents extra per ton.	
Lower Bench, Jackson County, for shipping mines, miners to carry 14 inches of brushing	1.17
Saline, White and Gallatin County	1.04
Williamson and Franklin County	1.04

Eighth District.

Fulton and Peoria Cos., thin or lower coal (Third Vein conditions)	1.37
Clinton and Peoria Counties, No. 5 Vein	1.15
Astoria No. 5 Vein (Fulton and Peoria County conditions)	1.15
Fulton and Peoria County No. 6 Vein	1.24
Gilchrist, Wanlock, Cable and Sherrard and Silvis Mines at Ellisville	1.19
Kewanee, Etherly and Wyoming	1.24
Pekin, shipping mines only	1.15

Ninth District.

Mount Olive, Staunton, Gillespie, Benld, Sorento, Coffeen and Worden, and mines on the Vandalia line as far east as and including Smithboro, and on the B. & O. S. W. as far east as Beckemeyer	$1.08
Coal five feet and under	1.13

The following is the scale for inside and outside day labor.

Inside and Outside Day Wage Scale.

Tenth. The inside and outside day wage scale shall be as follows:

Mine examiners, day or night	$8.04
Tracklayers	7.50
Tracklayers' helpers	7.25
Boy trappers, spraggers, couplers and switch throwers employed elsewhere than at bottom of shaft or on mechanical haulage after coupled thereto	4.00
Couplers getting $1.57 under agreement effective April 1, 1916, now to receive, per day	4.00
Boy trappers, spraggers and couplers getting $1.64 under agreement effective April 1, 1916, now to receive, per day	4.59

Spraggers, couplers and switch throwers, either at bottom of shaft or on mechanical haulage after coupled thereto, to receive $1.35 per day more than rates paid October 31, 1919.

Bottom cagers	$7.50
Drivers	7.50
Trip riders and grippers	7.50
Water haulers and machine haulers	7.50
Timbermen, where such are employed	7.50
Pipemen for compressed air plants	7.41
Brushers in long wall mines, Third Vein and Wilmington fields	7.50

Other company men, long wall mines, Third Vein and Wilmington field 7.25
Shot firers, per hour 1.18
All other inside day labor..... 7.25

The scale wages now being paid outside day labor at the various mines in this State shall be the wage scale for that class of labor during the life of this agreement, with a minimum of $6.86 per day. Firemen and stokers shall receive $7.25.

Connellsville Mining Rate.

Date in Effect	Mining, Loading room, rib, 100 bu.	Inside Labor per day	Outside Labor per day
Feb. 10, 1894..	$0.78	$1.35	$1.35
April 1, 1895..	0.90	1.50	1.35
Oct. 1, 1895...	0.95	1.59	1.59
Jan. 1, 1896...	1.05	1.65	1.68
April 29, 1899.	1.12½	1.72½	1.75½
March 1, 1900.	1.25	1.87½	1.90½
Jan. 1, 1903...	1.35	1.97½	2.00½
Dec. 16, 1903..	1.10	1.65	1.75
March 1, 1905.	1.20	1.75	1.85
March 1, 1907.	1.35	1.95	2.00
Jan. 1, 1908...	1.20	1.75	1.85
Jan. 16, 1910..	1.35	2.00	2.00
April 1, 1912..	$1.44	$2.15	$2.15
Feb. 1, 1916...	1.44	2.30	2.30
May 8, 1916..	1.66	2.40	2.40
Dec. 16, 1916..	1.82	2.75	2.75
May 1, 1917..	2.00	3.00	3.00
Oct. 1, 1917...	2.16	3.25	3.00
Nov. 10, 1917.	2.29	4.15	3.30
Dec. 1, 1919..	2.66	4,75	4.00
April 1, 1920..	3.24	5.05	4.40
Sept. 1, 1920..	3.24	6.55	5.40
May 16, 1921..	2.65	4.55	3.30
Aug. 1, 1921..	2.38	4.15	3.00
Aug. 23, 1922..	3.24	6.55	3.60

Other rates as shown in Frick wage scale rise and fall in proportion with the above.

Beehive Coke Produced in the United States.

Month	1917	1918	1919	1920	1921	1922
January	2,923,056	2,255,578	2,384,000	1,991,000	1,137,000	496,000
February	2,489,888	2,225,098	1,787,000	1,744,000	865,000	549,000
March	3,138,977	2,651,829	2,091,000	2,021,000	575,000	732,000
April	2,813,935	2,590,868	1,343,000	1,615,000	328,000	528,000
May	2,861,364	2,743,271	1,103,000	1,709,000	300,000	436,000
June	2,754,897	2,712,790	1,148,000	1,721,000	232,000	460,000
July	2,753,902	2,834,714	1,482,000	1,704,000	180,000	446,000
August	2,649,755	2,651,829	1,699,000	1,789,000	248,000	531,000
September	2,727,367	2,590,867	1,755,000	1,771,000	289,000	608,000
October	2,780,436	2,621,348	1,521,000	1,755,000	416,000	876,000
November	2,677,284	2,347,021	1,647,000	1,642,000	477,000	1,138,000
December	2,596,687	2,255,579	1,690,000	1,518,000	514,000	1,233,000
Total.....	33,167,548	30,480,792	19,650,000	20,980,000	5,561,000	8,033,000

KANAWHA WAGE SCALE

Following is the wage scale, made retroactive to August 16, that was posted at all Kanawha mines that declined to settle with the union officials under the so-called "Cleveland plan." It is the same that was in effect on April 1, 1922, when the nation-wide strike was called, and is on the same basis as that adopted in the Cleveland conference:

The wages provided for in the contract are:

Scale of Prices—Basis—Ton, 2,000 Pounds—Run of Mine.

Kanawha Thick Vein Nos. 1 and 2 Seams.

Pick mining	$0.94½
Pick mining, Powelton Seam	.91¾
Yardage in entries and breakthroughs between entries	1.49½
Machine loading in rooms	.63
" " in entries, breakthroughs in entries and room necks	.69
Machine cutting in both rooms and entries	.14
Machine cutting turret and arc wall	.08½

Drawing pillars by pick in the gas seams shall be left to local adjustment by the operators and miners interested, but the rate agreed upon for said drawing of pillars, shall in no case be less than 85.5 cents per net ton run of mine.

No yardage is to be paid in air ways following entries, or breakthroughs where the width exceeds fifteen feet.

Kanawha Hard Coal No. 5 Seam.

Pick mining	$0.96½
Yardage in pick entries and breakthroughs between entries	1.64½
Machine loading in rooms	.64
" " in entries and breakthroughs in entries and room necks	.70¼
Machine cutting in rooms	.14½
" " in entries and breakthroughs between entries and room necks	.15½
Machine cutting turret and arc wall	.09¼

Screened coal to be paid on basis of percentage of screenings.

Drawing pillars by pick in the splint seams shall be left to local adjustment by the operators and miners interested, but the rate agreed upon for said drawing of pillars shall in no case be less than 91½ cents per net ton run of mine.

Coalburg Seam.

Pick mining	1.02
Yardage pick entries	1.86
Machine loading rooms	.69 3/10
Machine loading entries and room neck	.7555
Machine cutting rooms	.15
Machine cutting entries and room neck	.16¼
Machine cutting turret and arc wall	.10

Raymond City Seam.

Pick mining over 1¾ inch screen per 100 bushels	5.60
Yardage in entries	1.86

Screen coal to be paid on basis of percentage of screenings.

Drawing pillars by pick in gas seam.....Not less than .85½

Drawing pillars in splint seam..... " " " .91½

No yardage to be paid in air ways, following entries or break-throughs, where the width exceeds 15 feet.

Graduated Scale for Gas and Splint Seams.

Machine Loading.	Gas	Splint	Machine Loading.	Gas	Splint
4 ft. and over.....	.63	.64	3 ft. 3 in. to 3 ft. 6 in..	.70½	.71½
3 ft. 9 in. to 4 ft.....	.65½	.66½	3 ft. to 3 ft. 3 in.....	.73	.74
3 ft. 6 in. to 3 ft. 9 in..	.68	.69			

Machine cutting below four feet shall be increased three-quarter cents per ton for each three inches, in accordance with graduated scale.

Graduated scale applies to all seams, except those based on Coalburg.

Inside Labor, Per Hour.

Drivers, single mule.....	.86	Greasers	.45
Drivers, two mules.....	.88	Trappers	.45
Track layers	.88	Spraggers and couplers.....	.48
Track layers' helpers.....	.84	All other inside day labor...	.84
Slate shooters	.85	Motor and machine runners..	.89
		Old men trappers.....	.65

Eastern Freight Rates.

	Rates Per Gross Ton					
	Clearfield, Cumberland, Meyerdale		West Virginia, Westmoreland		Pittsburgh, Finleyville, Gauley	
	Old	New	Old	New	Old	New
NEW YORK HARBOR						
Track (Jersey City)	3.46	3.09	3.71	3.34	3.86	3.49
Tide (Upper ports)	3.16	2.79	3.41	3.04	3.56	3 19
Tide (Lower ports)....	3.11	2.74	3.36	2.99	3.51	3.14
PHILADELPHIA						
Track	3.18	2.84	3.43	3.09	3.58	3.24
Tide (Inside capes)	2.93	2.59	3.18	2.84	3.33	2.99
Tide (Outside capes) ...	2.60	2.32	2.85	2.57	3.00	2.72
BALTIMORE						
Track	3.18	2.84	3.43	3.09	3.58	3.24
Tide (Inside capes)	2.93	2.59	3.18	2.84	3.32	2.99
Tide (Outside capes) ...	2.53	2.25	2.78	2.50	2.93	2.65
	Pocahontas, New River		Kanawha, Thacker		Kenova	
	Old	New	Old	New	Old	New
HAMPTON ROADS						
Tide (Inside capes)	3.04	2.74	3.14	...	3.24	...
Tide (Outside capes) ...	2.80	2.52	2.90	2.62	3.00	2.72

The anthracite strike of 1922 lasted from April 1st to September 11th; 164 days.

PITTSBURGH WAGE SCALE

The new scale posted by the members of the Pittsburgh Coal Producers' Association August 24, 1922, follows:

Effective August 24th and until March 31, 1923, the following scale of wages will be paid in the Pittsburgh district.

Pick mining—Thin vein mines, per ton of 2,000 lbs. mine run	$1.1164
Pick mining—Thick vein mines, per ton of 2,000 lbs. mine run	1.0311
Cutting—Thin vein mines, per ton of 2,000 lbs. mine run	.1692
Loading—Thin vein mines, per ton of 2,000 lbs. mine run	.7708
Cutting—Thick vein mines, per ton of 2,000 lbs. mine run	.1494
Loading—Thick vein mines, per ton of 2,000 lbs. mine run	.7337
Motormen, per day of 8 hours	7.60
Motormen helpers, per day of 8 hours	7.50
Skilled wiremen, per day of 8 hours	7.50
Wiremen helpers, per day of 8 hours	7.25
Track layers, per day of 8 hrs.	7.50
Track layers' helpers, per day of 8 hours	7.25
Bottom cagers, per day of 8 hours	7.50
Drivers, per day of 8 hours	7.50
Trip riders, per day of 8 hrs.	7.50
Water and machine haulers, per day of 8 hrs.	7.50
Timbermen, where employed, per day of 8 hrs.	7.50
Pipemen for compressed air plants, per day of 8 hrs.	7.42
Trappers, per day of 8 hrs.	4.00
All other inside labor, per day of 8 hrs.	7.25
Dumpers, per day of 8 hrs.	6.92
Ram operators, per day of 8 hrs.	7.10
Pushers, per day of 8 hrs.	6.68
Trimmers, per day of 8 hrs.	6.86
Car cleaners, per day of 8 hrs.	6.60

Dead work and yardage will be paid for at the scale in effect in 1921.

South America Needs Less Coal.

Argentina, whose oil fields are yielding more bountifully every year, imported about 3,500,000 tons of coal before the war. In 1921 these imports fell to 1,000,000 tons, and are not expected to exceed 1,500,000 tons this year.

Brazil, with abundant water power, imported 834,395 tons in 1921, compared with 1,120,838 tons in 1920, and with a yearly average of 1,805,409 tons during the pre-war period, 1909-13.

Oil production in Venezuela, Peru, Ecuador and Bolivia will soon tend to diminish demand for foreign coal in these countries, and it is confidently expected that the Paraguayan Chaco will prove to be a valuable field of petroleum. Uruguay mines some coal of fair quality, and is conveniently situated to obtain oil from Argentina.

Hard coal was first mined in the United States at Mauch Chunk, Pa., in 1806

New River Wage Rates.

Effective August 16, 1922, the following rates of wages will be paid:

Pick mining, room and pillar work, mine run, per ton of 2,000 pounds	.8311
For all machine cutting, per ton of 2,000 pounds	.1600
Loading and scrapping rooms, and pillars, mine run, per ton of 2,000 pounds	.6603

YARDAGE:

Where 7 feet in width is taken, per inch, per lineal yard	.0960
Where 8 feet in width is taken, per inch, per lineal yard	.1080
Where 9 feet in width is taken, per inch, per lineal yard	.1200
Where 10 feet in width is taken, per inch, per lineal yard	.1320
Where 11 feet in width is taken, per inch, per lineal yard	.1440
Room yardage, top, room width, when taken down, loaded or gobbed, per inch, per lineal yard	.0780
Room yardage, bottom, road width, when taken up, loaded or gobbed, per inch, per lineal yard	.1000

Inside Day Wage Scale.

Motormen and machine runners	$7.18	Pumpmen	$6.70
Brakemen	6.77	Bottom cagers	6.85
Trip rider, rope haulage	6.77	Drivers, single mule	6.65
Skilled wiremen	7.18	Drivers, two or more mules	6.77
Wiremen's helpers	6.74	Couplers, men	6.60
Tracklayers	7.05	Couplers, boys	4.00
Tracklayers' helpers	6.65	Greasers, men	6.60
Slate Shooters	6.89	Greasers, boys	4.00
Slatemen	6.65	Trappers	4.00
Bratticemen	7.05	All other inside day labor	6.60
Timbermen	7.05		

Outside Day Wage Scale.

Dumpers	6.65	Blacksmiths' helpers	6.80
Top Tipplemen	6.58	Car repairmen	7.06
Transfer operators	6.50	Greasers, men	6.50
Trimmers	6.50	Greasers, boys	3.85
Drum runners	7.10	Couplers, men	6.50
Car cleaners and droppers	6.50	Couplers, boys	3.85
Blacksmiths	7.50		

While the anthracite strike of 1922 was only one day shorter than the strike of 1902, official figures show that the amount of coal shipped in the past year was more than 9,000,000 tons greater than the tonnage shipped 20 years before—the precise figures being 40,815,777 gross tons against 31,200,890 gross tons. It cannot be said that the producers overlooked their public responsibilities.

CENTRAL PENNSYLVANIA WAGE SCALE

April 1, 1920, to March 31, 1924.

	Tonnage Rates Per Net Ton 2,000 lb.
Pick mining	1.1431
Machine loading	.7729
Cutting, scraping and loading	.2400
Cutting and scraping shall be advanced	.0456
For pushing cars both ways	.0535

	Inside Labor Per Day 8 Hours
Motormen	$6.10
Spraggers	6.00
Skilled wiremen, in charge of work	6.00
Wiremen's helpers	5.77
Track layers	6.00
Track layers' helpers	5.77
Bottom cagers	6.00
Drivers	6.00
Trip riders	$6.00
Water and machine handlers	6.00
Timbermen	6.00
Pipemen	5.92
Trappers	3.18
Cutters	6.10
Scrapers	5.85
All other inside labor not herein specified	5.77

	Outside Labor Per Day 8 Hours
Dumpers	$5.42
Ram operators	5.60
Pushers	5.18
Trimmers	$5.36
Car cleaners	5.10
Firemen	5.60

New Fairmont Wage Agreement.

After several days of joint conference, the northern West Virginia Coal Operators' Association and the officials of District 17, United Mine Workers of America, signed a wage agreement for the year from April 1, 1922, in Baltimore.

The agreement was similar to the so-called New York agreement of the Tri-State field, except that certain local conditions were adjusted. In most respects the new contract is a recast of the old agreement, but all clauses relating to bonuses were eliminated.

The chief change was made in the rate for the arc-wall type of coal-cutting machines, which fixed 10.4225 cents on the ton as the basic rate for top cutting in the rooms. This was against 15.23 cents, which was paid on the same basis as an ordinary mining machine. Where cuts are made in the top an additional cent is allowed the loader, but he must keep his track in proper condition for that kind of a machine and does not receive any additional compensation. This subject has been a bone of contention for several years.

In addition some slight changes were made in burial fund arrangements, to meet local practices.

A microscopic study of the Freeport coal bed in Pennsylvania shows that the bone coal from this seam, which is now thrown away, compares favorably with the best grades of bituminous coal mined in some countries. It is capable of yielding valuable by-products, and as high-grade coal becomes scarcer it should be a marketable product in the United States.

Imports and Exports of Coal and Coke.

Below is a statement of business done in shipment of coal from and to the United States in fiscal years ending June 30th:

Years (All gross tons)	Exports, Anthracite	Exports, Bituminous	Imports, Bituminous
1912	2,979,102	14,709,847	1,300,242
1913	4,625,481	16,083,101	1,578,264
1914	3,959,114	15,704,966	1,358,002
1915	3,682,188	14,412,995	1,529,608
1916	3,878,478	18,749,684	1,618,539
1917	4,635,134	19,533,705	1,282,790
1918	4,842,109	21,052,057	1,391,535
1919	4,285,824	18,152,243	1,008,250
1920	4,717,462	22,976,325	1,062,889
1921	4,877,800	34,423,964	1,019,592
1922	2,992,385	13,035,800	1,244,945

Bituminous dutiable previous to October 1, 1913, when put on free list.
Details of fuel exports in calendar years 1921 and 1922 are given below:

	Anthracite		Bituminous	
Exports	1921	1922	1921	1922
To Canada	3,938,559	2,296,333	11,961,366	9,675,320
France	1,423	.....	607,531	12,012
Netherlands	1,141	464	334,090	2,537
Sweden	.....	.....	67,060	.....
Switzerland	.....	.....	8,759	.....
British West Indies	2,479	371	106,525	90,586
Italy	155	.....	1,549,460	124,083
Panama	1,603	10	222,829	104,458
Mexico	44,524	5,322	172,211	91,056
Cuba	8,565	44,013	524,572	463,858
Other West Indies	.....	.....	100,256	103,918
Brazil	20	4	527,225	152,133
Argentina	1,749	22	752,636	78,971
Uruguay	.....	.....	88,390	.....
Chili	537	.....	150,844	46,916
Other countries	179,157	18,648	2,783,688	.....
Total*	4,179,812	2,365,187	20,652,788	11,083,112

*Does not include fuel or bunker coal laden on vessels engaged in the foreign trade, which aggregated during the 12 months as follows: 1917, 6,883,176 tons; 1918, 5,626,175; 1919, 7,342,734; 1920, 9,362,178; 1921, 7,547,518 tons, 1922, 4,115,872.

Coke exported in 1912, 912,576 tons; in 1913, 881,603 tons; in 1914, 592,487 tons; in 1915, 799,444 tons; in 1916, 1,048,790 tons; in 1917, 1,258,321 tons; in 1918, 1,506,986 tons; in 1919, 640,139 tons; in 1920, 821,252 tons; in 1921, 273,888 tons; in 1922, 456,733 tons.

It will be found that it pays in more ways than one if SAWARD'S JOURNAL is a weekly visitor.

Bituminous Coal Exports.

Exports of bituminous coal from the United States to various countries throughout the world during 1922 and five years previous were (gross tons):

Country	1917	1918	1919	1920	1921	1922
Europe—						
Austria Hungary	.....	.....	212	16,963	18,804	.....
Azores and Madeira Islands	2,269	.....	32,856	47,643	86,802	.....
Belgium	.....	.....	200	174,575	23,709	.....
Bulgaria	.....	.....	.....	.....	20,042	.....
Czechoslovakia	.....	.....	.....	.....	6,722	.....
Denmark	11	.....	88,903	966,649	153,923	3
France	51,172	8,098	532,443	3,646,349	607,531	12,012
Roumania	.....	.....	.....	8,248	2	.....
Poland and Danzig	.....	.....	.....	6,762	.....	.....
Finland	.....	.....	.....	27,883	821	.....
Germany	.....	.....	8,540	75,791	38,654	2,624
Gibraltar	.....	896	14,338	82,341	126,268	.....
Greece	3,741	3,241	48,110	231,336	96,124	9,931
Iceland and Faroe Islands	.....	.....	.....	47,422	13,885	.....
Italy	627,903	11,193	1,632,994	2,357,734	1,549,460	124,083
Malta, Gozo and Cyprus Islands	.....	.....	.....	.....	6,250	.....
Netherlands	.....	18,493	722,991	2,146,937	334,090	4,057
Norway	24,497	.....	159,842	736,270	42,484	.....
Portugal	49,428	5,421	35,878	164,414	100,179	1,269
Russia in Europe	.....	.....	.....	61,713	87,338	.....
Spain	176,406	.....	18,623	65,883	58,486	.....
Sweden	.....	.....	252,891	1,226,480	67,015	.....
Switzerland	4,546	.....	528,575	812,332	63,944	.....
Turkey	.....	.....	4,005	94,401	19,157	.....
United Kingdom—						
England	56,984	1,221	8,038	33,346	1,016,850	145
Ireland	.....	.....	.....	.....	405,640	.....
Scotland	.....	.....	.....	19,732	74,396	.....
	996,957	48,563	4,089,439	13,011,137	4,984,574	154,124
North America—						
Bermuda	44,526	23,499	19,438	49,153	32,802	14,257
British Honduras	1,346	77	601	1,129	696	1,696
Canada	18,117,377	18,134,328	10,670,490	14,481,844	13,915,377	9,677,320
Costa Rica	4,781	1,753	1,717	13,707	3,226	2,205
Guatemala	1,158	259	3,893	1,054	1,778	598
Honduras	12,488	7,983	8,367	15,670	14,140	5,814
Nicaragua	3,249	2,812	2,026	919	1,826	874
Panama	693,237	564,624	72,097	155,042	122,829	108,193
Salvador	2	4	2,243	8,840	39	30

Country	1917	1918	1919	1920	1921	1922
Greenland	4,188	787	1,217	1,052	710	200
Mexico	206,429	209,870	101,585	204,991	172,211	91,056
Miquelon, etc.	.....	.....	.....	2,000	.....	.....
Newfoundland and Labrador	3,919	2,174	8,418	25,397	4,880	2,132
West Indies—						
Barbados	62,604	81,240	103,424	73,461	19,763	18,664
Jamaica	79,866	25,400	33,038	82,455	58,652	27,704
Trindad & Tobago	26,809	33,823	28,038	48,347	7,766	12,445
Other British W. I.	83,932	33,823	28,038	48,347	7,766	12,445
Cuba	1,579,865	1,613,312	971,399	1,322,632	524,572	463,858
Danish	37,986	24,169	13,877	2,212	.....	.....
Dominican Republic	19,142	33,774	13,693	12,260	8,443	7,047
Dutch	49,068	18,757	24,694	40,377	12,201	28,870
French	89,252	41,951	23,934	45,461	55,821	53,995
Haiti	2,491	1,011	.....	1	71	3
Virgin Islands	.....	.....	469	40,159	23,720	14,003
	21,123,715	20,818,014	12,135,977	16,636,600	12,844,066	10,548,580
South America—						
Argentina	355,671	200,367	483,389	1,746,007	746,439	78,971
Brazil	767,359	626,191	642,109	966,029	527,225	152,976
Chile	354,340	336,069	123,860	494,121	150,844	46,916
Colombia	13,250	1,097	11,835	6,318	11,488	5,627
Ecuador	17,833	2,398	2,948	4,226	4,222	4,119
Falkland Islands	5,424	9,975	15,208	3,073	.....	.....
Guiana:						
British	2,129	5,333	3,846	15,934	3,447	3,252
Dutch	3,116	898	1,001	2,896	2,462	1,901
French	.....	11	.....	.....	.....	.....
Peru	18,304	24,249	45,819	35,382	28,152	13,829
Paraguay	.....	.....	.....	6,945	.....	.....
Uruguay	67,411	256,434	194,197	267,807	88,390	.....
Venezuela	944	2,417	496	2,825	6,649	23
	1,605,821	1,465,439	1,524,703	3,551,563	1,569,318	307,614
Asia—						
Far Eastern Republic	.....	.....	.....	.....	.....	11
China	.....	.....	.....	10	6,556	11
Aden	.....	.....	.....	15,869	.....	.....
Turkey	.....	.....	.....	11,746	17,127	.....
Dutch East Indies	.....	.....	13,221	.....	7,788	.....
Palestine and Syria	.....	.....	.....	.....	6,781	.....
Russia in Asia	.....	.....	3	5	40	8
	.....	.....	13,221	64,274	31,511	19

Oceania— Country	1917	1918	1919	1920	1921	1922
Other British.....	113	3	5	.....	10	.....
Philippine Islands..	73	38	.....	1	8,535	.....
New Zealand.....	.....	.....	50,034	35,641	59,831	.....
Dutch East Indies..	.....	.....	.....	1,103	.....	.....
	186	41	50,040	36,745	68,376	.....
Africa—						
British Africa:						
West	2,150	2,334	4,159	3,553	6,642	30
South	.....	.....	16,100	.....	.....	.....
East	.....	.....	16,100	.....	.....	.....
Algeria	.....	.....	.....	.....	.....	7,026
Kamerun, etc.	.....	.....	.....	6,396	.....	.....
Italian	.....	.....	5,166	.....	.....	.....
Canary Islands....	1,412	7,315	1,819	58,646	172,297	1,591
Egypt	.....	.....	37,543	626,530	476,200	52,118
French Africa	95,258	2,407	52,001	239,156	182,809	20,198
Morocco	.....	.....	.....	.....	12,685	.....
Portuguese Africa.	14,059	6,617	55,430	32,408	59,182	.....
	112,879	18,673	174,286	976,561	899,811	80,963
Grand Total....23,839,558		22,350,730	17,987,666	34,269,735	20,660,933	11,083,112
Recapitulation—						
Europe	996,957	48,563	4,089,439	13,011,137	4,985,574	154,124
North America ...21,123,715		20,818,014	12,135,977	16,636,600	12,853,867	10,548,580
South America ...	1,605,821	1,465,439	1,524,703	3,551,563	1,569,318	307,614
Asia	.....	.....	13,221	64,274	31,551	19
Oceania	186	41	50,040	36,745	68,876	.....
Africa	112,879	18,673	174,286	976,561	912,615	80,963
Grand Total 23,839,558		22,350,730	17,987,666	34,269,735	20,660,933	11,083,112

Norfolk & Western Ry. Shipments.

Shipments of bituminous coal over the Norfolk & Western Ry., for revenue and company use, during 1921 and 1922 were:

	Revenue		Company		Total	
Month	1921	1922	1921	1922	1921	1922
January	1,909,328	1,922,348	231,872	189,944	2,141,200	2,112,292
February	1,333,236	2,221,496	167,260	175,256	1,500,496	2,396,752
March	1,290,669	2,583,129	181,914	217,980	1,472,583	2,801,109
April	1,577,764	2,626,229	175,499	195,716	1,753,263	2,821,945
May	1,939,100	3,227,751	190,819	208,957	2,129,919	3,436,708
June	2,169,713	3,378,930	183,442	221,570	2,353,155	3,600,500
July	1,904,600	2,188,842	155,395	170,154	2,059,995	2,358,996
August	1,810,422	2,473,784	170,549	215,384	1,980,971	2,689,168
September	1,807,736	2,256,245	151,953	199,864	1,959,689	2,456,109
October	2,243,538	2,148,877	190,024	205,631	2,433,562	2,354,508
November	1,846,700	1,884,466	189,865	226,430	2,036,565	2,110,896
December	1,450,200	2,079,986	171,655	245,452	1,621,855	2,325,438
Total 21,283,006		28,992,083	2,160,247	2,472,338	23,443,253	31,464,421

American and British Coal to France.

Imports of coal into France from the United States and Great Britain during 1920, 1921 and 1922 were:

	From United States			From Great Britain		
Month	1920	1921	1922	1920	1921	1922
January	50,337	143,448	.....	1,622,663	565,405	253,375
February	72,649	54,142	3,785	1,232,085	369,641	1,206,442
March	79,458	37,728	8,227	1,184,031	437,659	1,237,815
April	209,453	30,513	.....	953,809	119,285	955,346
May	245,915	50,136	.....	978,769	1,953	1,062,774
June	258,877	147,333	.....	860,748	.....	982,071
July	261,555	110,648	.....	961,361	193,474	994,675
August	207,277	16,068	.....	801,893	715,021	939,588
September ...	449,704	17,045	.....	532,919	846,085	1,108,927
October	852,190	480	.....	745,608	879,149	1,143,552
November ...	741,437	.....	.....	744,521	1,033,986	1,384,063
December	217,497	.....	.....	1,072,515	1,233,993	2,310,789
Total	3,646,349	607,531	12,012	11,690,922	6,395,651	13,579,417

In addition to the above there were 1,423 tons of American anthracite coal imported into France.

British Coal Imported

Imports of coal from Great Britain during the past 12 years were:

Year	Tons	Year	Tons	Year	Tons
1911.....	10,272,959	1915.....	17,001,361	1919.....	16,204,596
1912.....	10,190,948	1916.....	17,311,877	1920.....	11,690,922
1913.....	12,775,909	1917.....	17,512,545	1921.....	6,395,651
1914.....	12,330,545	1918.....	16,511,005	1922.....	13,579,417

United States Exports of Anthracite.

Exports of anthracite coal from the United States, principally to Canada, during last seven years were:

	1916	1917	1918	1919	1920	1921	1922
January. ..	274,986	295,396	241,185	368,749	306,069	289,340	224,040
February ..	293,541	254,585	227,319	221,018	272,368	291,950	274,905
March	309,955	364,587	397,358	117,805	419,682	307,940	294,753
April	218,982	586,415	340,861	285,190	347,644	368,534	109,290
May	450,785	429,137	425,110	398,890	277,197	434,308	60,860
June	514,434	604,777	378,753	474,315	511,951	495,896	40,284
July	390,078	390,619	395,537	487,653	659,059	388,041	16,698
August	394,244	678,797	408,194	505,219	552,627	373,005	28,704
September .	353,507	448,124	442,714	489,703	325,234	287,268	88,688
October ...	343,181	478,317	456,029	433,742	444,391	307,873	404,999
November .	322,580	293,981	430,369	320,719	333,265	329,380	440,208
December .	229,379	541,663	292,014	345,402	372,441	306,227	381,758
Total ...	4,170,336	5,363,666	4,435,543	4,448,475	4,824,776	4,179,812	2,365,187

GROWTH OF EXPORT TRADE

Great Increase in Tonnage Movement in Past Thirty-Odd Years.

Frequently statistics are presented covering so brief a period that in these times of unusual coal trade conditions, we overlook the great change that has taken place in the progress of the trade. The trend of events is often best illustrated by a tabulation extending over a considerable period of years.

Such information is particularly useful with regard to our export trade, in which there has been so notable a growth during the past generation. While for many years exports of coal were very largely to Canada only, so far as any material volume of business was concerned, even the Canadian trade was very small back in the '80s.

The facts in connection with this line of business are well illustrated by the statistical data presented below, showing first the aggregate exports of bituminous coal, and in the second instance the exports to Canada, both anthracite and bituminous:

Exports of Bituminous Coal.

Year	Gross Tons	Year	Gross Tons	Year	Gross Tons
1922	11,073,112	1910	10,784,239	1898	2,682,414
1921	20,660,933	1909	9,693,843	1897	2,384,069
1920	34,269,735	1908	9,100,819	1896	2,246,284
1919	17,987,666	1907	10,448,676	1895	2,374,988
1918	22,350,730	1906	7,704,850	1894	2,178,321
1917	23,839,558	1905	6,959,265	1893	1,773,556
1916	18,490,603	1904	6,345,126	1892	1,700,496
1915	16,565,043	1903	6,303,241	1891	1,474,727
1914	13,801,850	1902	5,400,694	1890	1,138,681
1913	17,986,757	1901	5,763,469	1889	841,798
1912	14,459,987	1900	5,411,329	1888	780,248
1911	13,874,754	1899	3,478,976	1887	643,563

Exports to Canada.

Year	Anthracite, Gross Tons	Bituminous, Gross Tons	Year	Anthracite, Gross Tons	Bituminous, Gross Tons
1922	2,296,333	9,677,320	1912	3,435,765	10,258,336
1921	3,938,559	11,758,634	1911	3,498,980	10,609,587
1920	4,435,933	14,481,844	1910	2,963,788	7,567,297
1919	4,349,164	10,270,490	1909	2,802,361	6,980,213
1918	4,190,226	13,016,820	1908	2,710,308	6,542,635
1917	5,025,185	16,192,714	1907	2,648,769	7,194,546
1916	3,862,505	12,849,589	1906	2,176,342	5,357,004
1915	3,230,285	8,464,457	1905	2,187,450	4,777,180
1914	3,568,050	9,199,016	1904	2,193,746	4,384,208
1913	3,890,267	13,268,383	1903	1,983,562	4,552,301

Coal and Coke Shipped to Canada.

Exports of coal, anthracite and bituminous, and coke from the northern border of the United States to Canada, from customs districts, during 1921 and 1922 (gross tons), were:

	Anthracite		Bituminous		Coke	
	1921	1922	1921	1922	1921	1922
Buffalo	2,161,386	1,133,732	2,926,663	2,690,841	94,087	176,817
Dakota	25,497	9,098	46,779	23,170	7,235	25,307
Duluth-Superior	8,058	3,573	106,357	55,493	1,299	2,999
Michigan	2,884	3,417	1,196,883	1,250,094	77,594	129,466
Ohio	23,833	11,975	5,248,481	3,822,580	5,462	3,356
Rochester	381,667	244,502	428,507	451,317	12,983	245
St. Lawrence	1,205,817	731,269	1,919,168	1,274,181	14,795	8,998
Vermont	18,048	7,024	27,149	5,640	1,548	8,073
Maine & New H.	774	725	218	1,393	308	2,446
Massachusetts	878	636	15,425	25	.....	.....
Connecticut	.....	30	.....	74	.....	.....
Montana and Idah	.....	.....	6,630	.....	.....	.....
Wisconsin	.....	.....	.....	100	.....	.....
Total	3,938,559	2,296,333	11,758,634	9,677,320	203,251	366,828

Exports by Months.

Exports of anthracite and bituminous coal and coke from the United States to Canada, by months, during 1921 and 1922, were:

	Anthracite		Bituminous		Coke	
Month	1921	1922	1921	1922	1921	1922
January	272,975	219,256	1,177,519	526,016	24,235	23,830
February	269,488	261,466	628,860	660,796	18,357	23,415
March	295,971	272,951	591,557	975,321	20,678	22,339
April	352,069	108,112	704,587	453,406	14,857	16,587
May	414,407	55,745	1,124,246	272,146	12,880	18,804
June	479,720	39,017	1,412,497	427,849	12,334	19,517
July	382,432	15,075	1,308,973	290,018	11,366	21,684
August	367,611	28,284	1,139,007	373,589	15,786	20,756
September	278,522	87,420	1,034,816	1,110,794	13,599	29,029
October	304,400	399,763	1,122,927	1,647,323	21,756	29,910
November	320,247	433,723	890,652	1,563,983	23,097	31,009
December	300,717	375,521	621,993	1,376,079	14,306	109,848
Total	3,938,559	2,296,333	11,758,634	9,677,320	203,251	366,828

The average prices per ton of bituminous coal during 1922 and three years previous, as reported by the Department of Commerce in connection with the above, were:

	Av. Price			
Month	1919	1920	1921	1922
January	$3.72	$4.23	$6.41	$4.87
February	3.67	4.22	6.03	5.30
March	4.33	4.24	5.88	5.24
April	4.28	4.50	5.29	4.51
May	3.73	4.63	4.90	4.48
June	3.62	5.26	4.41	5.09

	Av. Price			
Month	1919	1920	1921	1922
July	$3.61	$6.22	$4.46	$5.36
August	3.67	6.66	4.24	6.81
September	3.71	6.72	4.60	6.70
October	3.74	6.79	4.55	6.23
November	4.01	6.60	4.83	6.47
December	3.94	6.52	4.62	6.41

Output of Coal in Canada.

Coal output in Canada during the year 1922 and two years previous was:

Provinces	1920 Short Tons	1921 Short Tons	1922 Short Tons
NOVA SCOTIA—			
Bituminous	6,437,156	5,734,653	5,348,830
NEW BRUNSWICK—			
Bituminous	171,685	180,358	288,656
SASKATCHEWAN—			
Lignite	335,222	332,117	249,559
ALBERTA—			
Anthracite	127,513	96,964	41,423
Bituminous	3,419,147	2,871,919	2,511,759
Lignite	3,361,105	2,885,537	2,834,077
Total Alberta	6,907,765	5,854,420	5,387,259
BRITISH COLUMBIA—			
Bituminous	3,095,011	2,840,870	2,935,579
Total Dominion.			
Anthracite	127,513	96,964	41,423
Bituminous	13,122,999	11,627,800	11,084,824
Lignite	3,696,327	3,217,654	3,083,636
Grand total	16,946,839	14,942,418	14,209,883

Canadian Coal Consumption, 1922.

We give below figures relative to Canadian coal consumption based on official data compiled by Canadian government:

Province	Anthracite	Bituminous	Total
Nova Scotia	27,607	2,753,591	2,781,198
New Brunswick	65,588	607,576	673,164
Prince Edward Island	5,989	81,777	87,766
Quebec	972,399	3,477,185	4,449,584
Central Ontario	1,715,971	8,132,889	9,848,860
Head of Lakes	43,816	1,723,396	*1,786,545
Manitoba and Head of Lakes	59,049	1,932,900	**2,451,536
Saskatchewan	1,027	194,519	†1,416,214
Alberta	39,389	2,214,683	‡3,575,559
British Columbia and Yukon	1,263	1,833,102	§1,916,226
Total	2,888,282	21,228,272	§§27,200,140

Of the total the United States supplied 2,682,741 tons of anthracite and 11,254,638 tons of bituminous. Great Britain supplied 164,118 tons of anthracite and 710,057 tons of bituminous. The balance of tonnage, including lignite and 41,423 tons of anthracite was produced in various sections of Canada.

*Includes lignite 19,333 tons; ** 459,587 tons; †1,220,668 tons; ‡1,321,487 tons; §81,861 tons; §§3,083,636 tons.

Canadian Exports by Provinces.

Provinces	1920 Net Tons	1921 Net Tons	1922 Net Tons
Nova Scotia	1,245,673	727,951	623,416
New Brunswick	113,050	71,534	63,901
Prince Edward Island	2	2	.....
Quebec	1,372	85	56,403
Ontario	.....	10	.....
Head of Lakes	.....	.....	75
Manitoba	721	1,690	2,154
Saskatchewan	3,132	2,633	5,167
Alberta	3,106	843	821
British Columbia and Yukon	1,191,167	1,182,528	1,069,431
Total	2,558,223	1,987,276	1,821,277

Facts About Canada's Coal Trade.

The consumption of coal in Canada varies between 30,000,000 and 35,000,000 tons annually, of which approximately one half is imported from the United States, according to the most comprehensive review of the coal situation in the Dominion ever published by the Dominion Bureau of Statistics, just issued.

Exports vary between 2,000,000 and 2,500,000 annually, and are the output of about 396 collieries working over an area of 713,000 acres.

Capital invested at the beginning of year 1922 was $176,991,495, of which $77,000,000 was invested in Nova Scotia, $53,000,000 in Alberta, $41,000,000 in British Columbia, more than $3,000,000 in Saskatchewan and over $1,000,000 in New Brunswick. Employes totaled 30,000 in 1921.

Canadian Coal Imports.

Imports of anthracite and bituminous coal into Canada from the United States and Great Britain in 1922 were:

	Anthracite		Bituminous	
	U. S.	Gt. Brit.	U. S.	Gt. Brit.
Nova Scotia	23,643	3,965	6,233	3,267
New Brunswick	43,444	22,144	61,501	25,278
Prince Edward Island	5,989	.....	1,355	.....
Quebec	835,290	137,109	1,264,570	674,593
Central Ontario	1,715,071	900	8,115,536	6,929
Head of Lakes	43,816	.....	1,722,836	.....
Manitoba and Head of Lakes	59,059	.....	1,793,010	.....
Saskatchewan	231	.....	1,404	.....
Alberta	.....	.....	1,130	.....
British Columbia	35	.....	9,899	.....
Total	2,682,741	164,118	11,254,638	710,057

There are 138 railway lines in the United Kingdom, but only 15 of these share, to any great extent, in the coal trade.

Anthracite Coal Exports.

Exports of anthracite coal from the United States to various countries during the calendar years 1921 and 1922 were:

	1921	1922
France	1,423	....
Switzerland	....	....
Netherlands	1,141	464
Italy	155	....
Mexico	44,528	5,322
Cuba	8,565	44,013
Argentina	1,749	22
Brazil	20	4
Chile	537	....
Denmark	....	8
Greece	87	....
Norway	....	....
Spain	4,256	....
Bermuda	3,231	....
British Honduras	616	....
Canada	3,938,559	2,296,333
Guatemala	98	164
Honduras	....	83
Nicaragua	....	89
Panama	1,603	10
Salvador	5	8
Miquelon, Langley, etc.	262	123

	1921	1922
Newfoundland and Labrador	15,397	5,271
Barbados	270	135
Jamaica	2	20
Trinidad & Tobago	....	....
Other British West Indies	2,479	371
Dutch West Indies	396	....
Dominican Republic	9,403	1,345
Colombia	71	....
Peru	....	125
Venezuela	10	8
Costa Rica	....	2
Canary Islands	1,130	....
Turkey in Asia	90	....
England	....	231
Haiti	1	....
Egypt	....	10,995
Germany	....	30
Azores	27	....
Dutch Guiana	30	....
British W. Africa	121	....
Russia in Asia	400	....
French Oceania	....	2

Coke Exports from the United States.

Exports of coke from the United States during 1922 and six years previous:

Month	1916	1917	1918	1919	1920	1921	1922
January	90,890	83,673	84,741	67,526	58,026	37,745	30,732
February	88,115	79,099	83,758	48,806	59,866	27,238	31,534
March	93,980	130,079	146,213	33,749	55,435	25,061	25,435
April	83,648	79,759	140,003	44,883	52,703	18,863	28,413
May	91,147	134,091	146,740	33,299	42,077	15,641	21,798
June	90,890	152,948	141,194	56,533	55,420	19,911	29,090
July	57,377	52,665	145,490	37,703	80,112	19,129	27,686
August	80,955	107,845	131,751	61,714	71,381	18,029	26,121
September	95,571	88,071	132,553	63,771	80,377	17,634	35,472
October	83,489	114,013	118,796	81,962	103,353	22,256	38,613
November	92,055	71,158	146,647	66,873	85,443	30,347	38,397
December	101,728	164,787	93,100	43,320	77,109	23,034	123,442
Total	1,048,790	1,258,321	1,506,986	640,139	821,252	274,787	476,733

Trade History of 1922.

Early in January two Chicago wholesale concerns, C. M. Moderwell & Co. and the Thos. N. Mordue Coal Co. were merged, the latter name being dropped.

Around the first of the year coal miners' wages in southeastern Kentucky and eastern Tennessee were reduced about 20 per cent under an arbitration award.

The Puritan Coal Co., of Chicago, and the Tuttle Coal Co., of Cincinnati were consolidated under the name of the Puritan-Tuttle Coal Co., with headquarters in the former city.

Indictments against eight retail dealers at Lockport, N. Y., were dismissed, the judge declaring that he could find nothing in the evidence to indicate a price-fixing conspiracy.

Robert J. Buck, Watertown, N. Y., was elected president of the George Hall Coal Co., of Canada, Ltd.

The Keystone Coal & Coke Co. acquired six mines of the Jamison Coal & Coke Co. in Westmoreland County, Pa., taking possession February 1. About 8,000 acres of coal land were included in the deal.

B. Dawson Coleman and J. H. Weaver, Philadelphia operators who had been associated for years in the ownership of bituminous mines in central Pennsylvania and West Virginia, dissolved partnership late in January.

Twenty-four men were killed in a gas explosion in the Gates mine of the H. C. Frick Coke Co. near Brownsville, Pa., on February 2, and on the same day eight men lost their lives in an Alabama mine explosion.

The holdings of the Carter Coal Co., consisting of ten mines and nearly 40,000 acres of coal land in Virginia, West Virginia and Kentucky, were purchased by the Consolidation Coal Co. early in February.

The Interstate Coal & Dock Co. was reorganized by the creditors' committee in March, with E. M. Poston, of Columbus, Ohio, as president.

Frederick G. Humphrey, retired as secretary of the Citizens Coal Co. in March, after being in the retail business at Waterbury, Conn., for more than 40 years.

April 1st saw the inauguration of the greatest coal strike in the history of the United States. It included all the anthracite miners and all the union bituminous miners, as well as a considerable number of men in soft coal fields that had previously been unorganized. These latter included the Connellsville coke region and Somerset County, Pennsylvania, always regarded as non-union strongholds. Operations in both of those districts were badly hampered, many operations being tied up entirely and others working short-handed. The same was true of the New River field, which was part union and part non-union. Elsewhere in southern West Virginia and in the greater part of eastern Kentucky (outside of the Kanawha region) most of the miners continued at work, as they had no affiliations with the union.

For a while during April production dropped to below 4,000,000 tons a week, and then gradually gained until late in June it got above 6,000,000 tons, dropping back in July to around 4,000,000. The bituminous strike ended in August, so far as the union mines were concerned, a series of State and district agreements being signed with the U. M. W., during the latter half of that month, under which it was agreed to continue the old wage scale until April 1, 1923. It was a decisive victory for the miners, as they had struck against a threatened reduction.

The settlements did not include Somerset County and the Connellsville region, but the strike in those fields was losing its force by the return to work of some of the strikers and the recruiting of forces by men from other districts. It was not until January, 1923, that the union finally conceded defeat in the Connellsville region and officially called off the strike. At that time similar action had not been taken in Somerset County, although production there had been restored to as nearly normal as it was possible to get in in the absence of a full car supply.

In the anthracite region the tie-up lasted until September 11th. Its duration was only a day or two less than the previous Big Strike of 1902. Here, too, the old agreement was renewed, but its expiration date was fixed as September 1, 1923, until of April 1st, as in the bituminous fields.

Over half a million miners were involved in the 1922 strike, including both anthracite and bituminous. This was the first time the agreements in the hard and soft fields expired at the same time, or at least the only time when they expired simultaneously without a new agreement being reached in one field or the other and a general strike of both classes of miners averted.

On May 1st E. T. McDonald succeeded J. H. Sessions as northwestern sales agent of the Philadelphia & Reading Coal & Iron Co. at Minneapolis. D. H. Kirkpatrick became sales agent at Milwaukee, a position formerly held by Mr. McDonald. Mr. Sessions took charge of the company's retail sales in Minneapolis.

Twenty-three officials and members of the United Mine Workers of America, charged with "levying war against the State of West Virginia," were called for trial at Charles Town, W. Va., on April 24th. They were selected by the prosecution as the first to be tried of more than 700 men who were under indictment as a result of the disturbances in the coal fields of Mingo and Logan Counties in 1921. The first case tried resulted in the acquittal of the defendant, William Blizzard, president of one of the union sub-districts. A few weeks later the Rev. J. E. Wilburn, another of those under indictment, who was charged with fatally shooting a deputy sheriff, was found guilty of murder in the second degree. That, and a similar verdict against a miner, seems to have been about the sum total of the results obtained at the Charles Town trials, which started with a great flourish of trumpets and attracted nation-wide attention for a while.

The coal-handling facilities at the port of Mobile, Ala., were augmented in April by the completion of the new Government terminal there. It was designed primarily for use in connection with the Warrior River Barge Line.

About May 1st J. B. McClary succeeded J. C. Maben, Jr., as president of the Davis Creek Coal Co. and the Yolande Coal & Coke Co. of Birmingham, Ala.

The Wheeler & Howes Co., the oldest retail firm at Bridgeport, Conn., retired from business in May after a career of 60 years.

During the month of May the Elkhorn Gas Coal Co. absorbed the Bucks Branch Coal Co. Both properties are located in eastern Kentucky.

Early in June the Martin-Howe Co., the Pike County Coal Co., the Tecumseh Coal & Mining Co. and the Simplex Coal & Mining Co. were consolidated under the name of the Howe-Coulter Coal Co., with main office in Chicago.

Over 30 employes of a stripping operation near Herrin, Ill., were murdered on June 21st by a large crowd of striking miners and their sympathizers. The attack followed an attempt to resume coal mining in Illinois with non-union

workers. Months passed before any of those accused of taking part in the attack were brought to trial, and then they were acquitted by a jury composed of citizens of that part of the State. This was the most serious incident of its kind during the strike, although smaller riots and bomb outrages occurred in various parts of the bituminous region. The anthracite strike was comparatively peaceful, the operators refraining from any attempt to resume production until a new agreement was signed.

Announcement was made in June that the Brotherhood of Locomotive Engineers had purchased 6,000 acres of coal land in West Virginia and eastern Kentucky and were planning to develop mines with a daily capacity of over 6,000 tons.

The Log Mountain Consolidated Coal Co. was organized in Kentucky during July to take over seven mining companies in Bell County, whose total land holdings embraced more than 38,000 acres.

Early in August Henry B. Spencer, a former vice-president of the Southern Railway Co., was appointed Federal Fuel Distributor early in August, to supervise the system of coal control devised by Secretary Hoover.

Announcement was made in August that the Garfield & Proctor Coal Co. of Boston, a prominent factor in the New England trade for more than 50 years, was in process of liquidation and would shortly retire from business.

A special session of the New York Legislature, called by Governor Miller late in August, passed a law creating a State Fuel Administrator to deal with the situation arising from the coal shortage. The first incumbent was William H. Woodin, president of the American Car & Foundry Co., who remained in office during the balance of the calendar year.

Around the 1st of September the Brady Coal Corporation, of Fairmont, W. Va., was reorganized as the Brady-Warner Coal Corporation, with an authorized capitalization of $6,000,000.

In September the Shanferoke Coal & Supply Co. took over the sale of the Hudson Coal Co.'s anthracite tonnage in New England; also the business of the Millspaugh & Green Co. at Syracuse and Utica, N. Y. A. C. Wadley, of Plainfield, N. J., was elected president of the new corporation and established his headquarters in New York City. Frank H. Beach, of Boston, was elected vice-president.

Conrad E. Spens, vice-president of the Chicago, Burlington & Quincy Railroad, was named Federal Fuel Distributor on September 22, succeeding H. C. Spencer. Since Mr. Spencer's appointment a new law was passed designed to give the Government greater control over coal distribution and prices.

J. P. Walsh resigned as vice-president and sales manager of the Pittsburgh Coal Co. about October 1st.

Members of the United States Coal Commission, which had recently been created by Congress to investigate the coal industry, were appointed by President Harding on October 10th. John Hays Hammond was named chairman, and the other members were Thomas R. Marshall, Judge Samuel Alschuler, Clark Howell, Dr. George Otis Smith, Dr. Edward T. Devine and Charles P. Neill. It was expected that the commission would require nearly a year to complete its labors.

The Holmes Coal Sales Co., a $200,000 corporation, was organized at Cincinnati in October to take over the Jewett, Bigelow & Brooks production in West

Virginia and Kentucky under a ten-year contract. The deal involved 11 mines, with an annual output of about 2,000,000 tons.

John D. A. Morrow, who had recently resigned as vice-president of the National Coal Association, and John Callahan, former traffic manager of that organization, formed the Morrow-Callahan Coal Co. about November 1st. Offices were opened in Cincinnati, Pittsburgh and New York.

An explosion in the Reilly No. 1 mine at Spangler, Cambria County, Pa., caused the loss of 76 lives on November 6th. A little over two weeks later, on November 22nd, a similar disaster in the Woodward No. 3 mine at Dolomite, Ala., killed 84 men.

F. W. Joslyn was appointed sales agent of the Lehigh Valley Coal Sales Co. in Cleveland early in November, to succeed the late F. W. Neiderlander.

The Pennsylvania State law imposing a tax of one and one-half per cent on the sales price of anthracite at the mines was upheld by the United States Supreme Court in a decision handed down on November 27th.

Two weeks later, on December 11th, the Supreme Court rendered another decision, declaring the Kohler mine-cave law unconstitutional. This law, which had been in effect in Pennsylvania since August 28, 1921, was so drastic that it had resulted in several collieries in Scranton and vicinity closing down.

In December the six anthracite mining properties controlled by the Wentz interests of Philadelphia were consolidated under the name of the Hazle Brook Coal Co., a new $7,000,000 corporation.

Announcement was made late in December that the Ford Motor Co., of Detroit, had purchased the mining property of the Pond Creek Coal Co. in eastern Kentucky. Earlier in the year the Ford interests had acquired the J. B. B. mine in the Pocahontas region, formerly owned by Dexter & Carpenter The Pond Creek holdings comprised approximately 28,000 acres, with several openings.

West Virginia Mine Districts.

The complete list of West Virginia inspectors, district to which assigned and their addresses is:

Chief, Department of Mines, R. M. Lambie, Charleston, W. Va.

District	Inspector	Post Office
1st,	C. W. Stuart	Thomas
2nd,	W. H. Sandridge	Grafton
3rd,	Evan L. Griffiths	Clarksburg
4th,	William Moore	Morgantown
5th,	W. B. Riggleman	Fairmont
6th,	A. E. Lafferty	Moundsville
7th,	Thomas Jarrett	Weston
8th,	V. E. Sullivan	Charleston
9th,	Eli J. Mason	Charleston
10th,	Zach Evans	Handley
11th,	John E. Hamilton	Eskdale
12th,	J. A. Porter	Gauley Bridge
13th,	Harry Fryer	Prince
14th,	Robert Lilly	Mount Hope
15th,	W. L. McGinnis	Beckley
16th,	William Gantz	Mullens
17th,	Thomas Stockdale	Freeman
18th,	W. D. Lee	Maitland
19th,	W. H. Prentice	Jaeger
20th,	S. T. Lambert	Matewan
21st,	J. F. White	Logan
22nd,	C. E. Foster	St. Albans
	C. H. Hetzel, Jr., director of mine rescue stations	Charleston
	J. R. McCune, inspector of sand mines, etc.	Martinsburg

Deaths in 1922.

Charles H. Rowland, president Moshannon Coal Mining Co., Philipsburg, Pa., January 1st.

Roswell S. Price, president Lake Erie Coal Co., Buffalo, N. Y., January 8th.

Miles A. Hanchett, retail dealer, West Orange, N. J.

Charles F. Waterbury, retail dealer, Stamford, Conn., January 24th.

Benjamin S. Hammill, long identified with Pittsburgh trade, died in Florida, February 13th.

John Leahey, Sr., president Bear Rock Coal Co., Lilly, Pa., February 16th.

R. B. Kelley, retail dealer, Poughkeepsie, N. Y., February 11th.

William Rockhill Potts, for many years a member of F. A. Potts & Co., New York, February 18th.

Lindsay McCandlish, second vice-president of Hutchinson Coal Co. of Philadelphia, February 27th.

John C. Morgan, retail dealer, Norwich, Conn.

Frank M. Dell, retail dealer, Indianapolis, Ind., February 25th.

Willis G. Townes, vice-president of the Archibald McNeil & Sons Co., of New York, died March 16th in Florida.

Walton Ferguson, a former associate of H. C. Frick in the coke business, Stamford, Conn., April 7th.

Arthur F. Rice, commissioner, Coal Merchants Association of New York City, died in California April 18th.

Ralph T. Fuller, vice-president, Producers Fuel Co., Pittsburgh, April 15th.

Frank W. Bale, head of the Balcron Coal Co., Rochester, N. Y., April 23rd

Asa W. Young, retail dealer of White Plains, N. Y., May 6th.

Walter S. Bogle, head of the Chicago wholesale firm bearing his name, and of associated mining interests, May 24th.

Edward Schonebaum, formerly general manager of the Market Coal Co. and associated interests, died at Cincinnati in May.

John M. Longyear, American capitalist and mining engineer who developed a coal mine on the island of Spitzbergen, died at Brookline, Mass., May 27th.

Mortimer T. Green, retail dealer of Buffalo, N. Y., died June 21st as a result of injuries sustained in an automobile accident.

William McGreevy, Philadelphia manager of Consolidation Coal Co., June 17th.

Edward J. Hackett, Sr., the proprietor of retail yards at Louisville, Ky., and New Albany, Ind., died in June.

Charles L. Fay, a coal broker of Cumberland, Md., June 7th.

Rudolph Reimer, one of the oldest retail dealers of Brooklyn, June 23rd.

Edward J. Millspaugh, president of the Millspaugh & Green Co., Utica, N. Y., July 14th.

Lewis B. Richards, coal dealer of Mount Kisco, N. Y., July 10th.

Charles A. Hughes, a leading operator of central Pennsylvania, died at Altoona on July 28th.

Theodore Sickley, of the retail firm of Roll & Sickley, Springfield, N. J., died late in July.

James C. Neff, coal and coke operator of Pittsburgh, Pa., died in August.

Francis S. Peabody, president of the Peabody Coal Co. and chairman of the executive committee of the Consumers Co., of Chicago, died August 27th.

Paul G. Spence, secretary-treasurer, Gibson-Spence Coal Co., Columbus, Ohio, August 15th.

George A. Drake, who had been identified with the New York wholesale trade for 25 years, September 6th.

Thomas B. Beadling, president of the North East Coal Co., Pittsburgh, Pa., died in September.

John Gordon Smyth, general manager of the Consolidation Coal Co.'s Elkhorn Division, Jenkins, Ky., September 21st.

William J. Pritchard, pioneer coal operator of southern West Virginia and eastern Kentucky, Bramwell, W. Va., September 12th.

Col. Laurance E. Tierney, head of an important group of mining companies in the smokeless region, Powhatan, W. Va., September 21st.

Bryn G. Tighe, vice-president of the Bickett Coal & Coke Co., Chicago, died late in September.

Jesse E. Eaches, retail dealer of Reading, Pa., died in October.

John McElligott, for nearly 40 years in the retail business at Waterbury, Conn., died late in October.

Melvin E. Lynn, sales manager, Campbell's Creek Coal Co., Cincinnati, October 29th.

F. W. Niederlander, sales agent of the Lehigh Valley Coal Sales Co. at Cleveland, died October 27th.

Allan A. Doyle, formerly of the Doyle & Gallery Coal Co., Rochester, N. Y., died in Los Angeles, Cal., early in November.

Charles G. Blake, president of the C. G. Blake Coal Co., Cincinnati, November 10th.

Rockwell Marietta, banker and coal operator, Connellsville, Pa., December 12th.

E. M. Radway, president, Richvein Coal Co., Cincinnati, December 8th.

John Edmonds, manager of anthracite sales, Madeira, Hill & Co., Philadelphia, December 15th.

Edward A. Uhrig, president, Milwaukee Western Fuel Co., Milwaukee, December 14th.

Don H. Bacon, formerly president of the Tennessee Coal, Iron & Railroad Co., St. Augustine, Fla., December 17th.

James M. Kelley, a retail dealer of West Philadelphia, died late in December.

A continuing study is being made by the field engineers of the Bureau of Mines relative to the methods of mining coal under the various conditions in which it is found, for the purpose of determining and improving, if possible, the percentage of extraction, together with the degree of safety attained and possible. When a sufficient number of mines has been investigated in any particular coal bed, it is planned to summarize the methods of mining in a Bureau publication, calling attention to any unnecessary loss in the different methods of mining operations.

Cleveland Receipts and Shipments.

Receipts and shipments of coal and coke at Cleveland, Ohio, during 1921 and 1922 were:

Month	Rail Receipts: Anthracite 1921	Anthracite 1922	Bituminous 1921	Bituminous 1922	Coke 1921	Coke 1922	Lake Shipments, Bituminous 1921	Lake Shipments, Bituminous 1922
January	12,513	46,166	503,213	419,047	10,154	12,134	.....	.....
February	11,209	129,385	305,718	455,760	2,611	43,447	.....	.....
March	8,649	166,959	296,506	452,653	2,708	8,826	.....	.....
April	7,331	81,749	196,919	231,756	3,155	15,365	95,469	63,805
May	8,472	47,788	170,983	341,108	2,873	7,488	347,704	.....
June	4,428	10,111	238,364	358,184	2,398	8,702	433,351	.....
July	8,421	8,592	224,066	234,486	3,280	3,860	256,005	8,479
August	22,454	.....	208,886	372,451	2,978	10,688	236,410	45,346
September	9,263	1,366	233,857	752,427	3,885	8,820	255,370	.....
October	8,792	36,112	394,439	410,307	4,379	22,037	213,328	410,369
November	12,076	888	478,097	634,882	4,331	13,692	62,787	270,991
December	77,724	4,925	391,776	762,646	4,335	56,281	.....	26,914

Rail Shipments.

Month	Anthracite 1921	Anthracite 1922	Bituminous 1921	Bituminous 1922	Coke 1921	Coke 1922
January	...	5,037	1,504	28,695	3,809	3,246
February	...	15,390	963	...	7,351	10,432
March	...	4,542	498	16,085	1,087	16,085
April	...	18,190	169	574	922	22,440
May	45	72,185	54	685	1,116	24,337
June	...	150	69	...	1,147	27,937
July	100	132	53	...	888	28,440
August	100	...	96	337	1,465	2,256
September	...	...	155	841	1,412	6,033
October	...	60	23,058	...	1,048	3,007
November	139	...	97	103	1,809	3,403
December	55	...	615	379	53,034	2,653

Colorado Fuel & Iron Co.

During 1922 the Colorado Fuel & Iron Co. produced 3,175,948 net tons of coal, of which 1,893,948 tons were sold commercially; 580,363 tons used at company plants and 617,392 tons were used in by-product coke ovens and 84,245 tons in beehive. Coke output was beehive 54,256 and by product 364,678 tons, a total of 418,934 tons. In 1921 the company produced 2,770,249 tons of coal and 312,910 tons of coke. The nation-wide strike did not adversely affect the business of the company, the average monthly production during the strike being several thousands tons in excess of monthly average for the year.

Census Gives Interesting Figures on Coal Consumption.

Some of the most valuable and, to the coal man, the most interesting data so far made available by the Census of Manufacturers for 1919 is contained in a recent special report compiled for the use of the Committee on Finance of the Senate. What interest the coal man in this array of figures are the annual tonnages of coal, both hard and soft, consumed by each and every industry in the country. In the accompanying table are shown the industries that in 1919 used one million net tons or more of bituminous coal, or that used 125,000 gross tons or more of anthracite. This is but a selection of the more important coal-consuming industries. Many more are listed in the report from which these figures are taken. All industries included in the census, including byproduct and beehive coke manufacturing, are shown to have consumed 203,452,724 net tons of bituminous coal and 14,545,300 tons of anthracite.

INDUSTRIES THAT CONSUMED 1,000,000 OR MORE TONS OF BITUMINOUS COAL, OR 125,000 GROSS TONS OR MORE OF ANTHRACITE, IN 1919

Industry	Anthracite Gross Tons	Bituminous Net Tons
Automobiles	17,133	1,120,585
Brass, bronze and copper products	200,719	655,947
Bread and other bakery products	596,989	554,982
Brick and tile, terra cotta and clay products	128,252	6,894,745
Cars and general shop construction and repairs by steam railroads	609,078	6,964,403
Cement	272,266	6,031,428
Chemicals	389,356	3,844,667
Coke, not including gas-house coke	5,808	64,245,629
Confectionery and ice cream	126,566	458,614
Cotton lace	322,668	3,610,372
Dye and finish, except that done in textile mills	422,855	1,071,156
Electrical machinery, apparatus and supplies	175,800	1,091,704
Flour-mill and grist-mill products	57,034	1,582,494
Foundry Supplies	513,767	3,691,909
Gas	1,388,467	7,383,687
Glass	15,268	2,653,654
Ice	205,875	3,309,634
Iron and steel, steel works and rolling mills	598,944	25,911,098
Iron and steel blast furnaces	42,779	2,261,315
Leather tanned carried and finished	89,722	1,488,166
Liquors, malt, including cereal beverages	346,914	1,692,067
Lumber and timber products	15,386	1,620,058
Oil and coke cottonseed	34,763	1,172,175
Paper and Wood Pulp	869,948	7,863,150
Petroleum, refining	1,105,503	3,619,534
Rubber goods, not elsewhere specified	84,915	1,928,116
Silk goods	306,165	269,717
Slaughtering and meat packing	222,891	3,802,849
Smelting and refining, copper	179,026	1,088,511
Smelting and refining zinc	835,129	1,123,599

Sugar, beet	.....	1,047,603
Sugar refining, not including beet sugar	406,248	987,640
Worsted goods	161,207	895,399

Fuel Oil for Bunker Purposes.

The amount of fuel oil loaded on vessels engaged in the foreign trade at ports in the United States, by months, during the past five years, was in barrels, as follows:

Month	1918	1919	1920	1921	1922
January	448,635	620,149	1,726,428	1,980,963	2,328,190
February	387,965	682,226	1,548,416	1,997,447	2,422,799
March	523,794	715,580	1,724,832	2,462,821	2,620,023
April	487,882	861,790	1,844,818	2,176,306	2,713,156
May	555,317	1,126,153	1,973,004	2,001,322	2,544,699
June	599,765	1,048,059	2,057,420	2,778,339	2,859,342
July	653,251	1.023,237	2,378,298	2,437,313	2,614,132
August	552,860	1,603,583	2,576,669	2,164,279	2,673,479
September	600,519	1,143,182	2,474,808	2,253,425	2,796,621
October	694,129	1,470,918	2,514,536	2,265,090	2,716,684
November	536,554	1,814,961	2,837,840	2,167,856	2,742,722
December	562,372	1,926,508	2,667,714	2,341,919	2,660,408
Totals	6,578,141	14,031,356	26,334,883	27,076,138	31,692,201

Total for 1917 was 5,908,319; 1916, 5,529,787 barrels.

The above figures show that the coal trade engaged in the bunker business has a growing competition to meet with. The consumption of fuel oil for bunker purposes has increased 25,783,822 barrels for the 12 months of 1921, compared with twelve months of 1917, or 434.8 per cent. For the 12 months of 1921, compared with 1920, there was an increase of 5,357,318 barrels, or 20.3 per cent.

Exports of Bituminous Coal from United States.

Exports of bituminous coal (including shipments to Canada) during 1922 and five previous years were:

Month	1917	1918	1919	1920	1921	1922
January	1,071,124	646,039	1,207,634	1,249,167	2,248,448	649,913
February	997,226	919,999	683,709	1,168,806	1,258,670	813,587
March	1,322,127	1,223,137	554,037	1,500,540	1,151,840	1,187,313
April	1,389,751	1,554,501	811,128	2,431,639	1,453,027	714,995
May	1,830,389	2,119,700	1,429,612	2,400,821	2,500,374	399,551
June	2,386,006	2,205,711	2,179,201	3,132,253	3,314,513	540,550
July	1,571,963	2,244,530	2,027,206	3,556,802	2,649,989	366,289
August	3,058,194	2,225,797	2,356,046	4,108,561	1,695,090	425,530
September	1,812,412	2,170,425	2,721,897	4,011,424	1,211,610	1,175,007
October	2,615,526	1,888,801	2,934,686	4,580,169	1,328,513	1,729,425
November	1,718,860	1,616,914	724,650	3,567,136	1,078,767	1,618,037
December	1,614,999	1,140,455	341,064	2,682,715	770,092	1,468,917
Totals	21,285,320	19,956,009	17,003,012	34,390,033	20,661,033	11,083,112

Coke Exports to Various Countries.

Exports of coke from the United States to various countries during 1921 and 1922 were:

Country	1921	1922	Country	1921	1922
France	2,571	7,715	Costa Rica	60	60
Germany	....	4,874	Guatemala	23	30
Belgium	3,014	200	Honduras	33	32
Italy	505	4,245	Nicaragua	5	54
Netherlands	4,014	6,082	Panama	224	6,519
Norway	1,035	1,171	Salvador	32	42
Portugal	267	....	Mexico	27,786	30,705
Spain	10	....	Canada	203,251	366,828
Sweden	10	....	Bermuda	3	....
Switzerland	....	460	Trinidad & Tabago	10	4
Turkey in Europe	12	....	Other British W. I.	....	10
England	76	565	Cuba	6,272	4,810
Scotland	250	4,064	Virgin Islands	2	....
Argentina	1,981	....	French West Indies	6	....
Brazil	744	4	Dominican Republic	88	65
Chile	4,975	10,692	Philippine Islands	482	....
Colombia	140	70	Barbados	15	....
Ecuador	63	30	Haiti	2	....
Dutch Guiana	1	....	Dutch W. Africa	20	....
Peru	12,418	10,162	French Africa	2	....
Uruguay	108	....	Jamaica	....	1,067
Venezuela	71	50	Paraguay	....	2
British Honduras	7	6	French Oceania	....	1
			Total	273,888	456,733

Foreign Bunker Coal and Prices.

Bunker coal loaded on vessels engaged in foreign trade for several years and average prices per ton during 1922 and three years previous were:

Month	1918	1919	1920	1921	1922	Average Price 1919	1920	1921	1922
Jan.	426,082	487,998	616,905	721,907	378,654	$6.97	$7.10	$8.01	$6.08
Feb.	415,303	417,841	512,886	577,315	358,544	7.07	6.96	7.83	6.06
March	432,474	457,413	771,602	608,607	414,952	6.52	6.90	7.17	6.00
April	389,912	682,592	696,017	241,054	401,172	6.46	7.62	7.36	5.87
May	425,796	670,001	767,346	803,903	420,486	6.32	7.89	6.88	6.02
June	468,779	672,669	836,453	811,938	365,282	6.35	8.64	6.82	6.33
July	548,792	659,155	820,382	786,063	321,742	6.31	9.79	6.61	6.50
Aug.	530,293	767,905	866,235	641,311	260,408	6.41	15.24	6.47	7.34
Sept.	503,608	783,807	830,789	513,598	260,293	6.30	9.98	6.42	8.33
Oct.	522,204	724,024	973,369	469,567	294,643	6.64	10.24	6.28	8.17
Nov.	425,447	613,851	845,495	413,811	331,643	6.90	9.88	6.31	7.94
Dec.	443,385	505,478	824,699	449,957	308,053	6.93	8.63	6.92	8.03
Total	5,626,175	7,342,734	9,362,178	7,547,518	4,115,872	....	....	....	....

Coal Traffic via Poughkeepsie Bridge.

The tonnage of coal and coke moving over the Poughkeepsie Bridge for the years named below will show to what extent the bridge route is being used to get coal into the New England market, and the growth of the traffic over the Central New England Ry. in the past few years.

Tonnages for the fiscal years ending June 30th up to 1915 and then for the calendar years were as follows:

Year	Tons	Year	Tons	Year	Tons
1907.....	913,573	1912.....	2,768,696	1917.....	4,289,384
1908.....	969,655	1913.....	3,079,688	1918.....	4,667,817
1909.....	1,806,547	1914.....	2,856,317	1919.....	4,537,270
1910.....	2,113,952	1915.....	2,828,437	1920.....	5,071,836
1911.....	2,389,680	1916.....	3,421,153	1921.....	4,476,863

Tonnage carried over the bridge was divided as follows:

	1916	1917	1918	1919	1920	1921
Anthracite	2,054,901	2,475,260	2,720,768	2,332,651	2,013,528	2,497,610
Bituminous ...	1,338,761	1,799,472	1,927,963	2,183,576	2,936,396	1,972,812
Coke	27,491	14,652	19,086	21,043	20,912	6,441

The increase for the fiscal year 1909 over 1908 was very notable, amounting to 836,892 tons. With the reconstruction of the structure in 1907-8 its usefulness was much increased.

We are advised that reports covering calendar year 1922 (reports of common carriers now cover calendar year, in accordance with practice, adopted by the Interstate Commerce Commission) will not likely be at hand before June, the above figures being the latest available.

American and British Bituminous Exports.

Exports of bituminous coal from the United States and Great Britain, by months of 1920, 1921 and 1922, were:

	United States			Great Britain		
Month	1920	1921	1922	1920	1921	1922
January	1,249,167	2,248,448	643,913	3,277,887	1,567,689	3,864,986
February...	1,168,806	1,258,670	813,587	2,486,780	1,639,691	3,879,963
March	1,500,540	1,151,840	1,187,313	2,223,935	1,880,958	5,078,055
April	2,431,639	1,453,027	714,995	1,881,693	578,543	3,961,658
May	2,400,821	2,500,374	399,551	2,008,059	14,014	4,811,946
June	3,132,253	3,314,513	540,550	1,777,948	7,424	4,567,497
July	3,556,802	2,649,989	366,287	1,629,955	773,451	4,816,498
August	4,108,561	1,695,090	425,530	1,729,960	2,912,584	5,887,671
September..	4,011,424	1,211,610	1,175,007	1,337,311	3,202,802	6,831,484
October ...	4,580,169	1,328,513	1,729,425	1,265,550	3,172,567	5,930,108
November .	3,707,318	1,078,767	1,078,806	1,290,625	3,360,708	6,300,237
December ..	2,682,715	770,767	1,468,917	2,133,157	4,087,283	5,748,106
Total...	34,390,033	20,660,933	11,083,112	23,290,663	23,196,884	61,678,189

CONNELLSVILLE COKE TRADE

Despite Handicaps of Long and Sympathy Strike and Car Shortage, Production Increased 58.8 Per Cent. Over 1921.

Overcoming all the drawbacks incident to the first general strike of the mine and coke yard workers in 28 years, and in spite of all the obstacles the conflict placed in the way of plant operation over a period of seven months out of 12, the Connellsville region made and marketed 5,675,000 tons of coke during 1922 according to the *Courier*. This was a gain of 2,102,580 tons, or 58.8 per cent over 1921, and within 5,075,000 tons, or 47 per cent of the output in 1920.

The average realized price having been $7.15 per net ton, the year's business yielded a gross revenue of $40,576,250, a gain of $26,036,511, or 179 per cent over the year immediately preceding.

Remarkable as was the increase in output, when all the circumstances connected with the year's operation are taken into account, the increase in value of product stands out even more conspicuously, 1922 being one of three years in the life of the region when the gain in revenue from one year to the next succeeding has equalled or exceeded $4,000,000. In 1917 the market value was $111,288,630, or $55,520,020 greater than in 1916. In 1920, with a production practically the same as in 1919, the value increased by $41,930,088 from $48,196,800 in the latter to $89,226,880 in the former year.

As serving further to show the enchancement of value of the region's product, the increase in revenue from 1922's sales was itself almost as large as the gross receipts in 1914 when almost three times as much coke was produced and the average price only $2.00.

Taking the years 1899-1920, both inclusive, 1922's output averaged less than 50 per cent, but contrast with that of 1921 is more instructive and more significant because in that year the trade was subjected to a period of depression unprecedented in the history of industry, both as to its severity and length. The result was that coke output in 1921 was reduced to the lowest point in 35 years. Before the region had either time or opportunity to recuperate from the effects of the greatest depression in its history, it had to meet an attack from another quarter which tested its powers of resistance as thoroughly as the earlier siege which it had undergone had tested its powers of endurance.

That it so successfully withstood the quickly successive ordeals of an unparalleled depression and a stubborn strike, and at the close of 1922 was firmly on its feet and facing the future with courage, confidence and hopefulness, must be accepted as proof that the beehive coke industry of the Connellsville region has lost none of its vitality or resourcefulness, however much it may have dropped behind in the race for tonnage supremacy in the manufacture of metallurgical fuel.

Production and Shipments.

The course of production and shipments of coke during 1922 followed generally the trend in 1921, having been heavier in the opening and clos-

ing and lighter in the mid-summer months of both years. But 1922 differed materially from 1921 in that, in each month, after February, the volume was very much greater while the last month of 1922 developed tonnages 200 to 225 per cent larger than the corresponding weeks of 1921 and exceeded the weekly average for the whole of 1920.

The year began with 81,130 tons or less than half that of the same week in 1921. The expected increase in demand did not begin to materialize until late in February, then grew slowly from week to week as the preparations to guard against the coal strike became more active, reaching the maximum of the first quarter, 149,960 tons, on the very day the strike began to be made. The five weeks immediately following the strike of the coke workers produced successive declines in the production total to the minimum of 52,200 during the week ended May 6. In the weeks that followed the increases were small but progressive with the exception of those following Decoration Day and the Fourth of July and the week ended December 2. The declines in the after-holiday weeks were traceable directly to the general and prolonged observance of these days. The December decline resulted from precautions taken by the operators to counteract the effect of 30,000 tons of coke, previously going to two furnaces which were obliged to close for repairs, being thrown on the market. Otherwise the growth in output suffered no setbacks after the first start at resumption. The maximum gains of the resumption period were 13,340 tons, September 30, and 14,360 tons week of October 14.

At the time while the strike was on did production reach by 36,000 tons the low point, 18,400 tons, registered during the industrial depression of the preceding year. After the turn in the tide of the strike's effects came in the week of May 13 weekly production kept from 100 to 150 per cent above the same weeks in 1921 until, in the week ended October 28, it attained 159,780 tons, or 9,000 tons greater than it had been at the inauguration of the strike. This proved conclusively that the strike, insofar as it has been a factor in retarding production, was over. That its effects had not been completely counteracted earlier was due more to the railroad strike than to the persistence with which many workers in the region refrained from taking advantage of the opportunities to take their places in the mines. There was greater lack of cars to receive coke than there was of men to make it, although many operations continued to be short of a full complement of men.

After the region had been restored to better than the pre-strike basis of operation production moved upward gradually to higher levels than had been reached since the depression of 1921 began to place upon operators the burden of applying curtailment methods week after week. By December the 200,000 tons weekly mark had been passed and from thence until the close of the year the weekly output, even when several days of cold weather prevailed and the Christmas holiday came without the usual precautions being taken against the slump which had heretofore followed it, production held up to the new high level.

The high water-mark of the year was reached during the week of December 16 when 208,610 tons were produced. Contrasted with the 52,200

tons made in the week of May 6, there had been a gain of 156,410 tons, or 300 per cent during the seven months following the high tide of effort which had been made to reduce fuel production to a state of complete paralysis. Truly the region had demonstrated its ability to withstand the onslaught just as, during 1921, it had shown that it had the vitality to "come back" after having suffered the first of its recent solar plexis blows when the post-war depression reduced it to about six per cent operation.

One noticeable effect of the strike was reflected in the proportions of coke made in the two districts and by the two operating interests during the year. The Lower Connellsville district, where the suspension of operation was the most complete and lasted longest, fell still further behind than in 1921 in the matter of producing its share. In 1921 it made 41.2 per cent as compared with 58.8 by the Connellsville district. Last year the disparity became much more pronounced, the proportions being 30.1 for the Lower Connellsville and 69.9 per cent by the Connellsville district.

Coke Output by Districts.

The estimated production of coke during 1921 and 1922 in short tons by quarters in the two districts was as follows:

	Conn.		L. Conn.		Total	
Quarter	1921	1922	1921	1922	1921	1922
First	1,247,310	787,012	402,801	572,025	1,650,111	1,359,037
Second	275,560	779,682	240,040	121,200	515,546	900,882
Third	127,169	907,291	312,625	198,920	439,794	1,106,211
Fourth	440,625	1,485,560	526,341	814,810	966,966	2,300,370
Totals ...	2,090,610	3,959,545	1,481,807	1,706,955	3,572,417	5,666,500

The merchant interests being the hardest hit by the strike their percentage of production became still lower. In 1921 they had 38.2 per cent to their credit as against 61.8 to the credit of the furnace producers. Because of their greater loss incident to the strike the merchants' percentage fell to 31 and that the furnace operators rose to 69 in 1922.

Merchant and Furnace Tonnage.

The production by the respective interests by quarters in 1921 and 1922 in short tons, is shown in the following tabulation:

	Merchant		Furnace		Total	
Quarter	1921	1922	1921	1922	1921	1922
First	320,029	510,777	1,330,082	848,260	1,680,111	1,359,037
Second	273,402	218,453	242,144	682,429	515,546	900,882
Third	287,158	222,130	152,636	884,081	439,794	1,106,211
Fourth	480,366	809,530	486,600	1,490,850	966,966	2,300,370
Totals ...	1,360,955	1,760,880	2,211,462	3,905,620	3,572,417	5,666,500

Growth in Forty-three Years.

The progress of and the fluctuations in the coke trade of the Connellsville region during the past 43 years, or since it assumed importance as an industry, is comprehensively shown in the following tabulation. This gives the total num-

ber of available ovens at the close of each year, the annual output, the average price per ton and the gross value.

Year	Total Ovens.	Tons Shipped.	Average Price.	Gross Revenue.
1880	7,211	2,205,946	$1.79	$3,948,643
1885	10,471	3,096,012	1.22	3,777,134
1890	16,020	6,464,156	1.94	12,537,370
1895	17,947	8,244,438	1.23	10,140,658
1900	20,954	10,166,234	2.70	27,448,832
1905	30,842	17,896,526	2.26	40,446,149
1910	39,137	18,689,722	2.10	39,248,416
1912	38,884	20,000,873	1.92	38,401,676
1913	39,067	20,097,901	2.95	59,288,808
1914	37,965	14,075,638	2.00	28,151,276
1915	38,986	17,921,216	1.80	32,258,188
1916	38,362	21,654,502	2.58	55,768,615
1917	38,110	17,806,181	6.25	111,288,631
1918	37,061	16,138,590	7.25	117,004,777
1919	35,758	10,254,640	4.70	48,196,808
1920	35,678	10,750,227	8.30	89,226,884
1921	35,473	3,572,417	4.07	14,539,737
1922	35,042	5,675,000	7.15	40,576,250

Production by Months.

In the following table the monthly production from the two districts is given for the last two years, all in net tons:

	Merchant		Furnace		Total Tons	
	1921	1922	1921	1922	1921	1922
January	121,582	142,086	614,315	234,917	735,897	377,003
February	85,109	151,477	467,459	246,060	552,568	397,537
March	113,338	217,214	248,308	367,283	361,646	584,497
April	90,876	93,153	108,090	284,280	198,966	377,433
May	102,023	62,070	84,233	185,075	186,256	247,145
June	80,503	63,230	49,821	213,074	130,324	276,304
July	59,504	53,043	33,376	230,429	92,880	283,472
August	100,950	68,470	57,300	303,029	158,250	371,499
September	126,704	100,617	61,960	350,623	188,664	451,240
October	180,546	193,006	76,953	435,327	257,499	628,333
November	149,595	284,378	153,937	514,509	303,532	799,087
December	150,225	332,136	255,710	540,814	405,935	872,950
Totals	1,360,955	1,760,880	2,211,462	3,905,620	3,572,417	5,666,500
Increase over 1921		399,925		1,694,159		2,094,083
Per Cent Gain		29.3%		76.7%		58.6%
Average per Month	114,246	146,723	184,288	325,468	298,534	472,108

The first discovery of coal in Belgium is said to have been made by a blacksmith named Hullos, who lived in a village near Liege in 1049.

Connellsville Coke, Average Monthly Prices.

These monthly averages have been computed from the actual market as shown by transactions and reported in the *Courier:*

Prompt Furnace Coke.

Month	1914	1915	1916	1917	1918	1919	1920	1921	1922
January	$1.88	$1.55	$3.14	$9.44	$6.00	$5.84	$6.00	$5.10	$2.85
February	1.90	1.55	3.41	10.57	6.00	4.72	6.00	4.80	3.10
March	1.92	1.53	3.45	9.58	6.00	4.05	6.00	4.43	3.38
April	1.90	1.55	2.45	8.00	6.00	3.71	11.10	3.60	4.44
May	1.83	1.50	2.34	8.40	6.00	3.80	14.50	3.40	6.50
June	1.80	1.50	2.54	12.32	6.00	3.92	15.60	3.12	7.50
July	1.75	1.67	2.65	13.42	6.00	4.06	18.00	2.95	11.35
August	1.74	1.54	2.75	11.85	6.00	4.32	17.78	2.95	13.35
September	1.70	1.66	2.94	6.00	6.00	4.42	16.85	3.26	11.50
October	1.65	2.18	5.69	6.00	6.00	4.60	14.95	3.25	9.70
November	1.60	2.35	6.91	6.00	6.00	6.05	8.45	3.15	7.35
December	1.60	2.85	9.00	6.00	6.00	6.81	6.25	2.90	7.75
Average	1.77	1.79	3.94	9.40	6.00	4.69	11.80	3.58	7.40

Prompt Foundry Coke.

Month	1914	1915	1916	1917	1918	1919	1920	1921	1922
January	$2.48	$2.10	$3.90	$10.93	$7.00	$6.85	$7.00	$6.75	$4.00
February	2.47	2.15	4.00	12.10	7.00	5.54	7.00	6.15	4.15
March	2.46	2.13	3.85	11.90	7.00	4.75	7.00	5.63	4.50
April	2.43	2.13	3.75	10.12	7.00	4.63	13.10	5.15	5.21
May	2.40	2.15	3.56	9.90	7.00	4.65	14.00	5.10	6.75
June	2.40	2.20	3.35	11.70	7.00	4.75	16.00	4.67	7.85
July	2.30	2.25	3.30	13.42	7.00	5.08	19.00	4.20	11.70
August	2.30	2.28	3.30	14.25	7.00	6.64	19.15	4.20	15.00
September	2.25	2.42	3.45	12.55	7.00	6.16	18.25	4.34	13.25
October	2.20	2.62	5.35	7.00	7.00	6.24	17.25	4.40	11.90
November	2.10	3.10	9.16	7.00	7.00	7.05	10.60	4.17	8.70
December	205	3.50	10.35	7.00	7.00	7.28	7.75	4.00	8.15
Average	2.32	2.42	4.78	10.60	7.00	5.72	13.01	4.90	8.43

Production of Beehive Coke, by Groups of States in 1921 and 1922

States	1921	1922
Pennsylvania and Ohio	4,528,000	6,139,000
West Virginia	210,000	549,000
Alabama, Tennessee and Georgia	168,000	468,000
Virginia and Kentucky	380,000	445,000
Colorado and New Mexico	99,000	229,000
Washington and Utah	153,000	203,000
Total	5,538,000	8,033,000

By-Product Coke by States.

The following tabulation shows the production of by-product coke by States in 1922 and four years previous:

State	Net Tons				
	1918	1919	1920	1921	1922
Alabama	2,634,451	2,230,933	3,075,000	2,401,000	3,496,000
Colorado	230,663	412,863	511,000	287,000	365,000
Illinois	2,285,610	1,703,903	2,086,000	1,322,000	1,985,000
Indiana	3,898,215	3,702,180	4,567,000	3,091,000	3,922,000
Kentucky	517,749	408,278	466,000	185,000	459,000
Maryland	474,368	356,237	685,000	293,000	583,000
Massachusetts	556,397	393,331	531,000	294,000	446,000
Michigan	.....	.....	1,433,000	777,000	1,141,000
Minnesota	784,065	586,094	664,000	436,000	455,000
New Jersey.....	682,148	788,465	722,000	740,000	787,000
New York	1,069,587	751,067	1,041,000	747,000	1,520,000
Ohio	5,226,364	5,374,027	5,697,000	2,966,000	4,877,000
Pennsylvania	4,586,981	5,872,762	7,710,000	5,304,000	7,181,000
Tennessee	124,469	104,749	138,000	58,000	28,000
Washington	30,129	26,547	23,000	24,000	3,000
West Virginia	603,393	392,812	414,000	188,000	483,000
Other States *a*.....	.....	.....	1,590,426	637,000	762,000
Total.....	25,997,580	25,143,542	30,908,000	19,750,000	28,493,000

(*a*) Includes Missouri, Rhode Island and Wisconsin (Michigan in 1918 and 1919), combined to avoid disclosing operations of individual companies.

Monthly production of by-product coke in 1921 and 1922 was:

Month	1921	1922	Month	1921	1922
January	2,278,000	1,882,000	August	1,383,000	1,818,000
February	1,888,000	1,796,000	September ...	1,423,000	2,244,000
March	1,772,000	2,133,000	October	1,734,000	2,806,000
April	1,519,000	2,202,000	November	1,766,000	2,925,000
May	1,590,000	2,539,000	December	1,860,000	3,063,000
June	1,408,000	2,589,000	Total.....	19,918,000	28,493,000
July	1,297,000	2,496,000			

Estimated Monthly Consumption of Coal for Manufacture of Coke (Net Tons)

	Consumed in By-product Ovens	Consumed in Beehive Ovens	Total Coal Consumed
1917 Monthly average.....	2,625,000	4,354,000	6,979,000
1918 " "	3,072,000	4,014,000	7,086,000
1919 " "	2,988,000	2,478,000	5,466,000
1920 " "	3,684,000	2,665,000	6,349,000
1921 " "	2,401,000	706,000	3,107,000
1922 " "	3,411,000	1,056,000	4,467,000

(a) Assuming a yield in merchantable coke of 69.6 per cent of the coal charged in by-product ovens, and 63.4 per cent in beehive ovens.

Father Hennepin discovered a "cole mine" on Illinois River in 1679.

How to Burn Coke.

For the convenience of retail dealers, Pilling & Co., New York, who are pushing the sale of their coke for domestic purposes, have prepared some instructions on the use of this fuel in house furnaces. This is the method they recommend:

Build the fire in the usual way. When it is well lighted regulate the draft to about one-half of that required for hard coal. A little experimenting on your part will enable you to ascertain the draft required.

Carry a bed of fuel of about 16 inches to 18 inches thick to obtain best results. Use very little draft after fire is started.

Do not stir the fuel bed, clean the fire in the morning if possible. Do not allow ashes to accumulate in the ash pit.

When the fire is to be kept over night add plenty of fresh fuel, dressing the top with the fine coke or dust. Close all the drafts in the back pipes and open the cold air damper. Close all drafts in the front of the furnace, leave the damper open in the feed door. To further increase check feed door may be left ajar. Do not shake the grate as the ashes will help retard the fire and prevent it from burning too freely.

Unless the weather is very severe shake the fire down only once a day, preferably in the morning, and as with hard coal stop shaking when red sparks appear in the ash pit. In mild weather the furnace can go two or three days without shaking as the quantity of the ashes produced is small. An inch or two of ashes on your grates at all times is a good protection and a help to the fire.

First, that coke requires less shaking on account of its freedom from slate and its low ash content.

Second, that coke requires less draft on account of its higher heat value.

Pennsylvania RR. Tonnage.

Tonnage of anthracite and bituminous coal carried by the Pennsylvania Railroad System for the years 1921 and 1922.

Revenue freight originating on road:

	Anthracite		Bituminous	
	1921	1922	1921	1922
Number of carloads....	109,123	76,984	812,428	820,195
Number of short tons...	5,787,614	4,166,922	45,410,675	46,370,344
Revenue freight received from connecting roads:				
Number of carloads....	86,985	68,431	444,958	578,564
Number of short tons...	4,337,245	3,296,809	23,421,145	30,606,965

These statistics are for the Pennsylvania Railroad System exclusive of the West Jersey & Seashore RR., which, however, does not originate any coal and does not receive any from connecting lines other than the Pennsylvania RR. The figures are therefore in effect System figures. The statistics previously published for 1921 and 1920 were for the Pennsylvania RR., which then did not include the P. C. C. & St. L. Ry. The 1922 tonnages should, therefore, not be compared with those for 1921 or 1920.

Coal Exports to Mexico.

Exports of bituminous coal to Mexico, by months, during 1922 and four years previous, with average prices in 1919, 1920, 1921 and 1922 were (gross tons):

Month	1918	1919	1920	1921	1922	Aver. Price 1919	1920	1921	1922
January ...	9,369	9,845	6,197	32,176	7,177	$5.38	$6.15	$8.57	$8.37
February ..	12,967	5,142	11,263	25,807	5,254	5.67	6.40	7.66	7.77
March	13,971	5,429	15,696	12,687	7,889	5.69	6.55	6.05	6.03
April	12,675	6,200	17,047	8,289	16,271	5.63	6.76	6.19	6.08
May	14,181	6,810	7,121	7,915	10,918	6.42	5.58	7.07	6.51
June	13,508	14,312	7,003	17,830	5,937	5.59	6.05	7.59	7.47
July	11,536	5,824	16,683	14,499	6,415	5.06	6.27	8.67	6.28
August ...	13,181	10,953	17,773	13,604	6,052	6.91	6.24	8.04	6.59
September .	22,746	10,892	15,847	13,688	4,756	5.30	7.19	7.81	5.35
October ...	19,186	8,757	20,557	10,377	7,048	4.73	9.56	8.67	6.57
November .	9,475	8,932	21,543	8,702	4,683	5.62	8.67	8.09	6.76
December .	9,836	8,489	46,261	6,637	8,710	4.10	9.44	8.59	6.36
Total ...	162,631	101,679	204,991	172,211	91,056	...	...	...	...

Baltimore & Ohio RR. Shipments.

Shipments of bituminous coal over the Baltimore & Ohio R. R., for revenue and company use, during 1921 and 1922 were:

Month	Revenue 1921	1922	Company 1921	1922	Total 1921	1922
January	3,418,831	3,094,192	599,346	496,211	4,018,177	3,590,403
February	2,575,566	3,634,705	489,820	496,069	3,065,386	4,130,774
March	2,576,893	4,177,618	473,696	553,733	3,050,589	4,711,351
April	2,629,620	2,102,668	424,632	440,915	3,054,252	2,543,583
May	3,191,212	2,328,596	439,660	442,419	3,630,872	2,771,015
June	3,530,817	2,522,683	425,521	445,191	3,956,338	2,967,874
July	3,131,462	1,533,176	417,141	358,784	3,548,603	1,891,960
August	3,336,760	2,256,715	439,994	393,111	3,776,754	2,649,826
September	3,399,540	3,414,481	872,635	410,853	4,272,175	3,825,334
October	4,217,981	3,902,026	523,204	573,755	4,741,185	4,475,781
November	3,219,182	4,134,276	510,713	653,944	3,729,895	4,788,220
December	2,493,312	4,058,107	481,293	675,071	2,974,605	4,733,178
Total.....	37,721,176	37,159,243	6,097,655	5,940,056	43,818,831	43,099,299

The North Dakota Lignite Coal Operators' Association has been formed and an intensive campaign for the use of lignite has been commenced. Stanley Washburn is president of the new organization, and he contends that lignite has a gas content that makes its use possible for smelting purposes. He approximates that North Dakota has 1,000,000,000 tons of lignite, which could be laid down in Minneapolis in carload lots at $5.50 to $6.00, half the price of soft coal, and one-third the cost of anthracite.

WELSH ANTHRACITE

Sizing Is Similar to Our Hard Coal but Names Are Different.

It is sometimes desired to draw a comparison between Welsh and American anthracite in the matter of quality, sizing, etc. The question of quality is a difficult one to answer, as nothing quite like Welsh anthracite is produced in this country. The sizing is somewhat similar in Wales and in Pennsylvania, although the names are entirely different.

The Welsh sizes are as follows: Machine-made cobbles, screened cobbles, German nuts, Paris nuts, French nuts, pea-nuts, beans, peas, grains, rubbly culm, and duff.

The machine-made cobbles correspond in a general way with the broken or grate coal shipped from Pennsylvania anthracite mines, as they pass through a 3½ or 4-inch square-mesh screen and over a 2¼-inch screen.

Screened cobbles pass through longitudinal bars 3 inches apart and over bars 1¼ inches apart. The sizing is not as precise as in the case of the machine-made cobbles, but in a general way this might be considered as a mixture of grate and egg.

French nuts are about the nearest comparison with our egg coal. These pass through a 2¼-inch mesh, and it is optional with the buyer whether it is passed over a 1¼-inch or a 1¾-inch mesh.

Paris nuts are slightly smaller, passing through a 2¼-inch screen and over a ¾-inch or a 1-inch screen, according to the desires of the buyer. This size is something like a mixture of egge and stove.

German nuts are something like our stove coal, passing through a 2-inch mesh and over a 1-inch, with an alternate size of 1¾-inch by ¾-inch.

Pea-nuts correspond more or less closely with our chestnut, although a shade smaller. They pass through a 1¼-inch screen and over a ½-inch.

In the same way, beans might be compared with our pea coal, but they are really a trifle larger, passing through a 1-inch mesh and over a ½-inch.

Welsh peas are about the same as No. 1 buckwheat, as they pass through a ⅝-inch screen and over a ¼-inch.

Grains, which pass through a ¼-inch mesh and over a ⅛-inch, are identical with Pennsylvania No. 2 buckwheat, or rice.

Duff might be compared with No. 3 buckwheat, or barley.

There is nothing shipped from the American anthracite mines that corresponds with rubbly culm. This includes everything that will pass between longitudinal bars 1¼ inches apart. It is sometimes sold for steam purposes without any further sizing.

Anthracite Wage Increases.

As to the number and size of the wage increases secured by the anthracite mine workers since the beginning of the war, it may be said that the record is as follows: April, 1916, 7 per cent; May, 1917, 10 per cent; November, 1917, 25 per cent; November, 1918, 25 per cent; April, 1920, 20 per cent for miners and 17 per cent for company men.

Destinations of British Coal Exports.

Exports of fuel (gross tons) from Great Britain and bunker tonnage supplied during 1922 and four years previous were:

Country:	1918	1919	1920	1921	1922
Russia	128,114	221,490	92,899	138,378	584,069
Sweden	1,051,121	1,592,324	1,372,478	1,232,904	2,522,820
Norway	1,250,867	1,330,546	800,917	694,316	1,566,969
Denmark	1,045,701	1,742,711	1,040,107	1,803,561	2,866,233
Germany	.....	4,301	13,457	817,877	8,345,606
Netherlands	88,001	401,901	239,067	1,787,678	6,069,789
Austria-Hungary	.....	142,567	99,258	.....	.....
Belgium	4,246	143,769	671,385	618,066	3,489,419
France	16,511,005	16,204,799	11,690,922	6,395,651	13,579,417
Portugal, Azores, and Madeira	194,100	673,926	416,999	456,285	784,356
Spain	429,003	805,740	290,141	1,021,472	1,711,021
Canary Islands	.....	262,184	382,249	160,304	524,815
Italy	4,053,570	4,641,046	2,905,217	3,383,083	6,341,743
Greece	41,328	139,315	98,238	248,554	428,647
Algeria	160,340	523,091	510,837	455,364	1,032,282
French West Africa	.....	263,636	111,297	48,730	119,327
Portuguese W. Africa	11,433	270,037	280,771	107,022	193,667
Chile	9,000	7,294	7,122	22,624	84,311
Brazil	169,982	189,205	158,144	242,223	1,013,221
Uruguay	162,417	184,813	117,480	221,847	502,533
Argentine Republic	258,110	639,089	273,668	887,344	2,021,092
Channel Islands	93,516	114,647	123,538	113,964	160,636
Gibraltar	1,615,985	1,465,533	1,134,326	367,750	689,428
Malta	1,195,883	733,045	420,785	206,108	214,396
Egypt, etc.	1,697,908	1,675,263	985,423	1,017,748	1,743,643
Sudan	403	23,186	151	6,835	.....
Aden and Dependencies	.....	49,479	27,842	70,073	.....
British India	1,350	354	535	531,561	999,159
Ceylon	.....	13,305	14,539	140,307	232,675
Other countries	1,583,767	790,972	652,081	1,462,453	6,168,825

Tonnage by Grades.

Grades:	1918	1919	1920	1921	1922
Total, anthracite	1,162,090	1,606,126	1,641,190	1,463,668	2,520,275
Total, steam	26,050,195	28,673,382	20,137,411	18,372,185	48,108,602
Total, gas	3,080,960	3,342,019	2,204,571	3,740,744	9,197,544
Total, household	148,834	143,877	76,059	228,246	616,418
Total, other sorts	1,310,825	1,484,164	872,622	855,709	8,755,545
Grand total	31,752,904	35,249,568	24,931,853	24,660,552	64,198,384
Coke	915,921	1,509,010	1,372,931	736,213	2,513,978
Patent fuel	1,505,090	1,708,015	2,258,111	850,074	1,227,114
Total, fuel, all kinds	34,173,915	38,466,593	28,562,895	26,246,839	67,939,476
Bunkers, foreign	8,756,476	12,021,242	13,840,360	10,926,444	18,259,027

Great Britain—Weekly Output—1922.

Output by weeks for the year 1922 is as follows:

Week ending—	1922 Tons	Week ending—	1922 Tons	Week ending—	1922 Tons
Jan. 7.....	3,674,000	May 20.....	4,804,100	Sept. 23.....	5,143,900
Jan. 14.....	4,719,100	May 27.....	4,629,600	Sept. 30.....	5,177,200
Jan. 21.....	4,560,500	June 3.....	4,440,900	Oct. 7.....	5,209,000
Jan. 28.....	4,738,700	June 10.....	2,681,800	Oct. 14.....	5,245,900
Feb. 4.....	4,803,100	June 17.....	4,350,200	Oct. 21.....	5,355,400
Feb. 11.....	4,912,500	June 24.....	4,353,900	Oct. 28.....	5,388,300
Feb. 18.....	5,000,800	July 1.....	4,530,000	Nov. 4.....	5,423,400
Feb. 25.....	5,046,600	July 8.....	4,597,800	Nov. 11.....	5,440,500
March 4.....	5,038,900	July 15.....	4,626,700	Nov. 18.....	5,376,000
March 11.....	4,995,900	July 22.....	4,390,800	Nov. 25.....	5,471,800
March 18.....	4,956,900	July 29.....	4,989,100	Dec. 2.....	5,573,300
March 25.....	4,929,000	Aug. 5.....	5,121,600	Dec. 9.....	5,592,000
April 8.....	4,961,200	Aug. 12.....	3,623,200	Dec. 16.....	5,741,600
April 15.....	4,383,800	Aug. 19.....	5,158,400	Dec. 23.....	5,506,200
April 22.....	3,543,900	Aug. 26.....	5,148,000	Dec. 30.....	3,428,000
April 29.....	5,160,100	Sept. 2.....	5,203,600	Totals	262,846,200
May 6.....	4,766,600	Sept. 9.....	5,160,800		
May 13.....	4,945,200	Sept. 16.....	4,994,700		

British Coal Trade.

The following table shows production, exports and foreign bunker trade of British coal (gross tons) for the years 1906 to 1922.

Year	Production	Exports		Foreign Bunker
		All Coal	Anthracite incl. in "all coal"	
1906	251,050,809	56,599,771	1,856,313	18,590,213
1907	267,828,276	63,600,947	2,127,903	18,618,828
1908	261,512,214	62,547,175	2,274,792	19,474,174
1909	263,758,562	63,076,799	2,535,903	19,713,907
1910	264,293,588	62,085,476	2,425,932	19,525,735
1911	271,845,924	64,599,266	2,454,523	19,264,189
1912	260,567,552	64,445,004	2,547,712	18,291,370
1913	287,411,869	73,400,118	2,976,389	21,031,507
1914	265,643,030	59,039,880	2,389,190	18,535,579
1915	253,590,810	43,534,771	2,227,231	13,630,964
1916	256,375,366	38,351,553	1,999,503	12,988,172
1917	248,375,366	34,995,787	1,384,086	10,227,952
1918	227,714,579	31,752,904	1,162,090	8,756,476
1919	229,743,128	35,249,568	1,606,126	12,021,242
1920	229,531,194	24,931,853	1,641,190	13,840,360
1921	164,354,200	24,660,552	1,463,668	10,926,444
1922	262,846,200	64,198,384	2,520,275	18,259,027

Bituminous Coal Mined by Machinery.

The tonnage of bituminous coal mined by machine in each State is thus reported by the United States Geological Survey:

State	1916	1917	1918	1919	1920	1921
Alabama ...	5,802,150	6,062,744	5,951,547	5,135,655	5,654,437	5,012,152
Arkansas ...	224,245	154,615	242,984	113,218	68,107	159,591
Colorado ...	3,342,345	4,077,520	4,574,017	4,157,836	5,388,964	4,182,342
Illinois	40,791,408	48,576,462	50,566,911	35,913,902	54,923,724	45,609,876
Indiana	11,367,758	13,344,845	14,997,532	10,819,551	14,291,782	10,737,554
Iowa	636,892	1,022,101	876,754	659,209	1,616,333	698,443
Kansas	37,897	34,823	56,314	54,670	66,518	34,269
Kentucky ...	21,441,700	23,221,880	24,808,171	23,956,661	27,685,488	26,509,733
Maryland ..	221,609	290,116	301,965	311,324	457,150	186,165
Michigan ...	1,044,583	1,199,263	1,272,285	943,519	1,397,537	1,091,455
Missouri ...	947,811	1,127,843	1,244,682	1,888,357	1,396,188	1,063,127
Montana ...	2,024,799	2,070,075	2,268,318	1,429,304	2,095,738	1,106,567
N. Mexico.	510,219	1,052,684	1,236,709	957,549	1,254,993	743,864
N. Dakota...	218,276	300,417	344,482	324,961	357,833	336,848
Ohio	31,669,049	35,828,497	38,841,452	31,238,608	38,192,460	29,256,048
Oklahoma ..	1,258,022	1,605,117	1,899,487	1,798,933	2,348,041	1,908,959
Penn.	94,391,391	95,423,140	98,334,139	86,382,120	98,853,831	73,842,026
Tennessee ..	1,517,426	1,399,825	1,549,945	1,597,489	1,707,046	1,239,611
Texas	19,000	2,688	2,000	10,267	32,755	44,740
Utah	2,050,405	2,259,697	2,767,084	3,187,766	3,523,148	3,070,582
Virginia	6,011,262	6,440,561	6,394,276	6,312,020	7,950,964	5,841,695
Washington	277,236	231,856	249,110	273,115	395,125	131,566
W. Virginia.	54,408,511	56,075,888	60,688,232	55,562,196	64,921,571	56,163,635
Wyoming ...	3,477,081	3,593,470	4,462,737	3,982,269	5,238,743	3,731,501
Total ...	283,691,475	306,396,127	323,931,133	276,019,799	339,813,476	272,702,339

The percentage of machine mined production in years 1904-1921 has been, respectively, 28.8, 33.67, 35.1, 37.5, 38., 41.7, 43.8, 46.8, 50.7, 51.7, 55., 56.5, 55.5, 55.9, 59.2, 59.8 and 65.6.

Coal Consumption of Locomotives.

The question is often asked how much coal it takes to run a freight train. Of course a great deal depends upon the weight of the train and the profile of the road, but some details obtained by the New York Central management in a recent conservation test may serve to give an idea on this subject.

One train was operated from West Albany to DeWitt, a distance of 140 miles, on a consumption of 13,395 pounds of coal.

A heavier train running from DeWitt to West Albany used twice as much coal, or 29,295 pounds. This train consisted of 71 loads and one empty car.

A third train made the 61 miles from St. Johnsville to West Albany, with 76 cars, on 8,786 pounds of coal.

On another occasion an engine pulled 80 cars from Clearfield to Avis, 101 miles, on 12,300 pounds of coal.

THE BRITISH COAL TRADE IN 1922

Poor Beginning, but Last Quarter Saw Tonnage Back to Pre-War Level—Britain Regains Old Supremacy in Export Business.

The year 1922 witnessed a remarkable expansion in British coal exports; month by month, as the year progressed, a higher level was reached. This recovery can be traced to several contributory causes, foremost among which are the comparatively low prices at which British coals have been offered and the expansion in U. K. coal outputs to a level exceeding that of pre-war days, which resulted in an excess of coal being available which must necessarily contribute to keeping export prices at a low level.

The inland demand in the early days of the year was restricted on account of acute industrial depression, and as the U. K. in 1913 consumed over 65 per cent of her output in her own country, it is obvious that the reduction which was felt in home requirements in the early part of 1922 must needs result in an excess of coal, available for export, for which a market has had to be sought.

To trace the fall in British coal prices we must take a retrospective view and again refer to the strike settlement terms of 1921, when miners' wages were considerably reduced and export prices fell rapidly. At the end of 1921, f. o. b. prices were around 25/– for large, and it is only as a result of the American demands in the middle of 1922 and the later recovery in exports which sent the price up.

An added reason, however, is that British home requirements are expanding and the excess coal was rapidly being called into demand. From the 1913 output of 287,411,869 tons, 189,000,000 tons was used internally and the level of British export constituted the record total of about 73,000,000 tons.

Early in 1922 there was still much of the industrial depression which was so pronounced in 1921, not only in the U. K. but also on the Continent of Europe, and this tended to a slow inland and export market which was only stimulated when the U. S. stoppage came, with its unusual request for British coals to make good the shortage.

U. S. Strike Causes Boom.

Welsh prices, which had been sagging for some months, suddenly revived and from 24/6 f. o. b., at which best large was difficult to sell, prices were rapidly bid up to the vicinity of 29/– to 30/–, but colliery finances do not illustrate that much financial benefit accrued as a result of the so-called American boom, the general opinion being prevalent that the United States virtually cornered supplies at the depressed prices then ruling.

Towards the close of September, exports to the United States fell off, but it was very gratifying to British exporters to note that as the American demand was declining, business with the normal directions of export steadily revived, and during September British exports attained the level of 7,082,729 tons, which constitued the highest monthly total of shipments for the year up to that time.

Canada is a potential British coal market which Welsh exporters intend to cultivate over the coming year, and with the arrangements already entered into, some competition with the U. S. product must be looked for.

Notable Revival in British Exports.

The principal directions in which British, and particularly Welsh, exports have expanded in 1922 are France, South America and Germany, and also Holland and Belgium. The record level of 1913 export to Holland has been greatly exceeded this year, the opinion being that a large proportion of this coal has found its way to Germany, which country is buying British coals heavily with funds lying in British banks.

As the year closed Bristol Channel ports were full of shipping, with exports maintained at the highest level of the year.

As the year closed the Welsh market was very firm, with collieries sold wel into the new year and docks full of shipping. Much congestion, however, prevailed in consequence of Bristol Channel docks working only for two shifts in lieu of the three shifts in operation in pre-war days. But with the revival to old-time levels, it is anticipated that we shall witness in 1923 a reversion to the pre-war method of working.

European Coal Reserves.

Statistics showing the changes brought about by the war in the coal reserves of the various European countries, according to figures given out by the British Mineral Resources Bureau, have recently been frequently quoted in the foreign press. The figures, which are for actual and probable deposits of coal and lignite in seams of one or more feet to a depth of 4,000 feet, are as follows:

European countries.	Pre-war reserves.		Post-war reserves.	
	Millions of tons.	Per cent of total.	Millions of tons.	Per cent of total.
Germany	207,930	40.2	148,248	28.7
England	165,387	32.0	165,387	32.0
Russia	60,170	11.6	1,988	.4
Austria and Hungary	43,095	8.3	998	.2
Belgium	11,000	2.1	11,000	2.1
France	8,808	1.7	18,577	3.6
Norway (including Spitzbergen)	8,750	1.7	8,750	1.7
Spain	5,537	1.1	5,537	1.1
Czechoslovakia	....	....	24,493	4.7
Poland	....	....	68,829	13.3
Ukraine	....	....	55,057	10.8
Other countries	6,535	1.3	7,748	1.4
Total	517,212	100.0	517,212	100.0

England has succeeded Germany in first place in the amount of coal reserves in Europe. France's reserves have been doubled, and Germany, Austria and Russia have lost heavily in coal reserves, especially to Poland and Ukraine.

Bituminous coal exported from Mobile, Ala., during 1922 amounted to 14,552 tons. Anthracite amounted to 125 tons and coke 9,293 tons.

British Prices, 1922.

Monthly record of highest and lowest market quotations for coal, coke, and patent fuel during the year 1922.

	January		February		March		April	
	High	Low	High	Low	High	Low	High	Low
	S D	S D	S D	S D	S D	S D	S D	S D
Best Admiralties	26 0	24 6	27 6	24 0	27 6	27 0	29 0	27 6
Second "	25 0	24 0	27 0	24 0	27 3	26 6	28 6	27 0
Ordinary steams	24 0	23 0	26 6	23 0	26 6	26 0	27 6	26 6
Best small steams	19 0	17 6	21 0	18 6	20 6	19 0	20 0	19 0
Ordinary " "	18 0	16 0	20 0	17 0	19 6	18 0	19 0	18 6
Cargo "	17 0	14 0	19 0	14 0	18 6	15 0	18 0	15 0
Best dry coals	26 0	24 0	27 0	24 0	27 0	26 6	27 6	26 6
Ordinary dry coals	25 0	23 0	26 0	23 0	26 0	24 0	25 0	24 0
Washed nuts	35 0	27 6	32 6	27 6	32 6	27 6	30 0	27 6
" smalls	20 0	18 0	21 0	18 0	21 0	19 0	20 0	19 0
Black Veins	24 0	23 0	26 6	23 0	27 6	26 0	28 6	26 9
Western Valleys	23 6	22 6	26 0	23 0	27 0	26 0	28 0	26 6
Eastern "	23 6	21 0	25 6	22 6	26 0	25 0	28 0	25 6
Inferior "	23 0	21 0	24 6	21 0	25 0	23 0	26 6	23 6
Best house coals	35 0		35 0	30 0	35 0	30 0	30 0	
Seconds "	34 0	28 0	30 0	25 0	28 6	24 0	28 6	24 0
No. 3 Rhondda large	30 0	27 6	32 6	27 0	32 6	30 0	32 6	30 0
" " small	21 0	19 0	22 6	18 0	22 6	21 0	22 6	20 0
No. 2 " large	25 0	22 0	24 0	22 0	24 0	22 6	25 0	22 6
" " thro'-and-thro'	22 6	18 0	22 6	18 0	22 6	20 0	23 0	18 0
" " small	17 0	15 0	18 0	15 0	18 0	16 0	18 0	15 0
Patent fuel	28 0	25 0	28 0	25 0	28 0	26 0	28 0	25 6
Coke—export	37 6	32 0	35 0	30 0	35 0	30 0	35 0	32 6
" blast furnace	25 0	20 0	25 0	20 0	22 6	20 0	22 6	20 0
" foundry	40 0	35 0	40 0	32 6	35 0	32 6	37 6	32 6

	May		June		July		August	
	High	Low	High	Low	High	Low	High	Low
	S D	S D	S D	S D	S D	S D	S D	S D
Best Admiralties	28 9	27 3	27 3	25 6	30 0	24 3	32 6	30 0
Second "	28 6	26 9	27 0	25 0	29 0	24 0	31 0	29 0
Ordinary steams	28 0	26 0	26 6	24 6	28 0	23 6	30 0	27 6
Best small steams	20 0	18 6	19 0	17 6	21 6	17 6	23 0	22 0
Ordinary " "	19 0	17 6	18 6	16 6	21 6	16 0	22 6	21 6
Cargo "	18 0	15 0	17 0	15 0	19 6	14 0	22 0	18 0
Best dry coals	28 0	26 6	26 6	25 6	28 6	24 6	31 0	28 0
Ordinary dry coals	25 0	24 0	25 0	23 6	27 0	23 0	30 0	26 0
Washed nuts	27 6	25 0	25 0	22 6	27 6	22 6	30 0	25 0
" smalls	20 0	18 6	19 6	17 0	20 0	17 6	22 0	20 0
Black Veins	28 6	26 9	27 0	25 6	28 0	24 0	31 0	28 0
Western Valleys	27 6	26 3	26 6	25 3	27 6	23 6	30 0	27 0
Eastern "	27 0	25 6	26 0	24 0	26 6	23 0	29 0	27 0
Inferior "	26 0	25 0	25 6	23 0	26 0	22 0	28 0	25 0
Best house coals	30 0		30 0		28 6	26 6	28 6	27 6
Seconds "	28 6	24 0	28 6	24 0	26 0	22 0	26 0	22 0

	May High	May Low	June High	June Low	July High	July Low	August High	August Low
No. 3 Rhondda large	32 6	30 0	32 6	27 0	28 0	26 0	32 6	28 0
" " small	22 6	20 0	21 0	20 0	23 0	18 0	25 0	22 0
No. 2 " large	25 0	22 6	24 6	22 6	24 0	22 0	25 0	23 6
" " thro'-and-thro'	22 6	20 0	22 0	19 0	22 0	18 0	24 0	21 0
" " small	16 6	15 0	16 0	14 6	17 0	14 0	18 6	16 0
Patent fuel	28 6	25 6	28 0	25 0	28 0	24 6	30 0	25 0
Coke—export	35 0	32 6	35 0	32 6	40 0	35 0	45 0	40 0
" blastfurnace	25 0	22 6	25 0	22 6	28 0	22 6	32 6	30 0
" foundry	37 6	32 6	37 6	32 6	37 6	32 6	40 0	37 6

	September High S D	September Low S D	October High S D	October Low S D	November High S D	November Low S D	December High S D	December Low S D
Best Admiralties	31 0	26 6	28 6	27 0	28 6	27 6	30 0	28 0
Second "	30 0	25 6	27 6	26 0	28 0	26 6	28 6	27 0
Ordinary steams	29 0	25 0	26 0	25 0	26 6	25 6	27 6	26 0
Best small steams	22 6	16 0	17 0	16 0	17 0	16 0	19 6	16 0
Ordinary " "	22 0	15 0	16 0	15 0	16 0	15 0	18 0	15 0
Cargo "	21 0	14 0	15 6	14 0	15 6	12 0	16 0	14 0
Best dry coals	31 0	28 0	28 6	28 0	29 0	28 0	29 6	28 0
Ordinary dry coals	30 0	27 6	28 0	27 6	28 0	27 0	28 6	27 0
Washed nuts	32 6	25 0	32 6	25 0	32 6	25 0	32 6	25 0
" smalls	21 6	19 0	20 0	18 6	21 0	18 6	21 0	18 6
Black Veins	30 0	25 0	26 0	25 0	26 6	25 6	28 6	26 0
Western Valleys	29 0	25 0	25 6	24 6	26 0	25 6	28 0	25 6
Eastern "	28 0	24 0	25 0	24 0	25 0	24 6	27 6	25 0
Inferior "	27 0	22 6	24 0	22 6	25 0	22 6	26 6	22 6
Best house coals	28 6	27 6	29 0	27 6	29 0	28 0	30 0	28 0
Seconds "	26 6	22 0	26 0	22 0	27 6	23 6	29 6	23 6
No. 3 Rhondda large	32 6	28 0	29 0	28 0	30 0	28 0	30 0	29 0
" " small	23 0	18 0	20 0	18 0	20 0	19 0	21 0	19 0
No. 2 " large	24 6	21 6	23 0	21 6	24 6	21 6	26 0	21 6
" " thro'-and-thro'	23 0	18 6	21 6	18 6	22 0	19 0	22 6	19 6
" " small	17 6	13 0	14 0	12 0	14 0	12 0	15 0	13 0
Patent fuel	30 0	27 0	29 0	26 0	30 0	26 0	30 0	28 0
Coke—export	45 0	35 0	37 6	35 0	42 6	35 0	45 0	37 6
" blastfurnace	32 6	25 0	27 6	25 0	27 6	25 0	27 6	25 0
" foundry	40 0	32 6	40 0	35 0	40 0	35 0	32 6	35 0

The Hull, England, Coal Trade.

The total quantity of coal imported into Hull, England, during the year 1922 was 5,397 325 tons, as against 2,397,963 tons in 1921. The totals for 12 years were as follows:

Year	Via River	Via Railway	Total	Year	Via River	Via Railway	Total
1911	522,392	5,933,592	6,455,984	1917	195,431	2,616,925	2,812,356
1912	462,636	6,549,342	7,011,978	1918	160,930	2,444,672	2,605,602
1913	517 488	7,428,477	7,945 965	1919	164,080	1,937,568	2,101,648
1914	431,944	5,220,689	5,652,633	1920	183,376	1,987,905	2,171,281
1915	261,346	4,406,387	4,667,733	1921	165,664	2,232,299	2,397,963
1916	217,849	3,072,432	3,290,281	1922	221,486	5,175,830	5 397,325

ENGLISH AND WELSH COAL ANALYSES

In view of the interest now being taken in the importation of British coal, we have received many inquiries as to how this compares with American coal. For the benefit of those seeking information along this line we present the following analyses of Welsh and English coals, taken from The Coal Catalog.

Welsh Admiralty coal is a high grade steam fuel which corresponds with our West Virginia smokeless. That will be one of the principal grades imported, but large orders are also being placed for Durham gas and other high volatile grades. Railroads are buying high volatile coal because they are accustomed to using them and also because the price on some grades at least is lower than on Welsh coal. Moreover, there is a limit to the tonnage that can be handled through Cardiff and other Welsh ports and this would necessarily divert business to other directions.

England.

Name of Coal	Location	Moist	Volatile	Fix. Car.	Ash	Sul.
Main Band Seam	Cumberland-Whitehaven	2.90	32.04	62,96	1.46	0.64
Little Limeston (Mfg.)	Cumberland	3.73	12.93	76.88	6.47	...
New Leversons (gas)	Durham	1.44	30.64	60.66	5.81	1.45
Sherburn (gas)	Durham	1.35	27.19	61.59	8.21	1.66
Busty Seam (coking)	Durham	1.20	25.61	67.31	5.10	0.78
Busty Seam (st., gas, cok.)	Durham	0.84	26.85	68.44	3.10	0.77
Harvey Seam (gas, coking)	Durham	1.10	27.40	65.75	4.08	1.67
Hutton Seam	Durham	0.70	23.94	70.13	4.45	0.78
Main Seam (gas)	Durham	1.80	27.73	67.17	2.25	1.05
Coking coal	Durham	0.58	25.50	71.57	2.93	0.71
Low Main (screened steam)	Durham	1.50	34.68	59.15	3.80	0.87
Main Seam (coking, gas)	Durham	1.52	33.66	59.40	4.20	1.22
No. 2 Seam (gas)	Durham	1.73	44.30	49.80	2.48	1.69
Lambton (gas)	Durham	1.50	28.94	60.43	7.57	1.56
Harvey Seam (gas)	Durham	1.46	27.87	66.97	2.55	1.55
Busty Seam (gas)	Durham	0.86	27.73	65.33	5.30	0.78
Hutton Seam (coking)	Durham	1.22	24.20	66.79	5.65	2.14
Coking coal	Durham	1.20	21.40	72.00	6.50	1.23
N. Pelton (gas)	Durham	0.93	28.59	68.10	1.20	1.18
W. Stanley (coking)	Durham	1.00	24.73	69.84	3.80	0.63
Wallsend (gas)	Durham	3.11	32.16	60.95	3.12	0.66
Harvey Seam (gas)	Durham	1.17	29.80	62.61	4.68	1.74
Silkstone Seam (gas)	Derbyshire	1.93	33.47	61.87	1.79	0.94
Kilburn Seam (house)	Derbyshire	1.16	42.24	52.84	2.83	0.93
Trensherbone Seam (gas, steam, house)	Lancashire	2.40	34.80	60.00	1.90	0.90
Gas coal	Lancashire	1.14	36.26	58.97	3.63	2.26
Seven Feet Seam (gas, st.)	Lancashire	4.10	34.60	58.20	2.20	0.90
Six Feet Seam (steam)	Lancashire	4.80	31.90	58.40	3.80	1.10

Name of Coal	Location	Moist	Volatile	Fix. Car.	Ash	Sul.
Princess Rushy Park (gas and house)	Lancashire	4.10	33.90	59.10	2.00	0.90
Steam (coking and house)	Lancashire	2.13	20.04	73.73	3.24	0.86
Deep Arley (gas and house)	Lancashire	1.13	33.49	60.01	3.45	1.92
Six Feet Seam (gas, steam, house)	Lancashire	2.80	33.40	60.40	2.20	1.20
Upper Main Seam (steam)	Leicester	13.22	30.99	50.52	5.27	1.25
Top Hard Seam (steam)	Nottingham	8.26	31.15	55.80	4.79	0.73
Top Hard (st. and house)	Nottingham	9.50	34.24	54.18	2.08	1.21
Seven Feet Seam (gas, house, steam)	Staffordshire	1.28	37.07	57.44	2.12	2.09
Banbury (gas)	Staffordshire	1.67	35.51	60.21	1.36	1.25
Eight Feet Cockshead Seam (steam)	Staffordshire	1.90	31.30	64.30	1.50	1.00
Lane Seam (house)	Staffordshire	3.40	31.60	62.60	1.60	0.80
Flint coal (house)	Shropshire	10.76	37.07	45.59	5.36	1.22
Slate coal (house)	Warwick	12.17	32.36	52.70	2.02	0.75
Nine Feet Seam (steam)	Warwick	7.10	37.60	50.60	3.90	0.80
Harvey (gas)	Yorkshire	1.36	29.51	64.59	3.75	0.79
Barnsley Seam (gas, steam, house)	Yorkshire	0.68	35.28	62.95	2.46	0.63
Shafton Seam (steam, house)	Yorkshire	8.44	37.01	51.19	2.00	1.36
Flockton (gas)	Yorkshire	0.64	36.14	61.65	1.57	0.59
Beeston Seam (steam, house)	Yorkshire	8.75	34.37	55.95	0.93	0.83
Brockwell Seam (steam)	Yorkshire	1.99	27.81	66.32	3.04	0.84
Silkstone Seam (gas)	Yorkshire	1.88	33.45	56.92	7.75	3.50
Black Bed (gas, steam)	Yorkshire	1.92	32.36	63.09	1.44	1.20
Black Bed (gas)	Yorkshire	0.60	27.61	66.32	3.55	1.92
Stanhope (gas)	Yorkshire	0.70	33.40	63.40	1.60	0.90
Pildacre, (gas)	Yorkshire	0.61	43.37	46.35	9.67	2.07
Winter Seam (gas, house)	Yorkshire	5.14	32.20	59.20	2.40	1.06
Wharnclifee Silkstone (gas)	Yorkshire	1.50	34.87	61.18	2.45	1.55
Flockton (gas)	Yorkshire	4.15	32.34	58.67	4.29	0.55

Wales.

Name of Coal	Location	Moist	Vola-tile	Fix. Car.	Ash	Sul.	B.T.U.
Dry steam coal, large	Aberdare Merthyr.	1.16	10.25	84.72	3.87	0.70	14,553
Anthracite, large	Amman district	2.73	5.84	88.31	3.12	0.79	14,482
Second Admiralty, large	Cardiff coals	1.04	17.17	76.53	5.26	0.86	14,479
Patent fuel	Cardiff	1.46	16.35	72.48	9.71	0.91	13,500
Anthracite, large	Gwendraeth district.	2.12	6.19	89.23	2.46	0.74	14,697
Anthracite, large	Loughbor and Llanelly district.	2.30	5.24	90.40	2.06	0.78	14,569
Bituminous, large	Monmouthshire, East Valley	1.06	29.86	62.76	6.32	1.40	14,083
Bituminous, large	Newport	1.29	27.86	65.84	5.01	0.92	14,438
Bituminous, large	Monmouthshire, West Valley	1.76	25.24	66.19	6.81	1.21	14,071

Name of Coal	Location	Moist	Vola-tile	Fix. Car.	Ash	Sul.	B.T.U.
Anthracite, large	Neath district	1.83	7.47	86.82	3.88	0.79	14,574
Semi-bituminous, large	No. 2 Rhondda	1.32	16.01	77.54	5.13	1.21	14,350
Semi-bituminous, large	No. 2 Rhondda	1.64	22.76	69.52	6.08	2.09	14,256
Bituminous, r-c-m	No. 2 Rhondda	3.28	29.76	55.20	11.76	1.39	13,615
Semi-bituminous, r-c-m	No. 2 Rhondda	1.48	22.46	65.47	10.59	2.19	13,982
Steam, r-c-m	No. 2 Rhondda	1.67	16.99	70.80	10.54	1.89	13,831
Bituminous, large	No. 3 Rhondda	1.32	26.09	66.99	5.60	1.03	14,267
Bituminous, large	No. 3 Rhondda	1.68	32.42	60.78	5.12	0.79	14,233
Semi-bituminous, large	No. 3 Rhondda	1.17	22.52	71.59	4.72	0.66	14,474
Anthracite, large	Pembrokeshire dist.	4.05	6.18	87.61	2.16	1.21	14,346
Anthracite, large	Pembrokeshire dist.	2.93	5.09	90.40	1.58	1.46	14,672
Dry steam, large	Port Talbot and Swansea district.	1.26	11.96	82.65	4.13	1.44	14,656
Dry steam, r-c-m	Port Talbot and Swansea district.	2.41	11.65	70.49	15.45	1.01	13,124
Steam, r-c-m	Port Talbot and Swansea district.	1.25	14.83	73.72	10.20	1.33	13,705
First Admiralty, large	Rhondda and L. Aberdares Valley.	1.06	13.60	80.80	4.54	0.89	14,897
Anthracite, large	Swansea district	2.42	6.74	86.38	4.46	1.29	14,522
Patent fuel	Swansea	2.70	16.13	72.73	8.44	1.07	13,240

British Coal to United States and Canada.

Exports of coal from Great Britain to the United States in 1921 and 1922, by ports, were as follows:

Ports	United States 1921	United States 1922	Canada 1921	Canada 1922
Bristol Channel	24,942	1,362,310	1,538	255,482
No. West Ports	.....	272,390	....	113,109
No. East Ports	.....	649,911	....	253,586
Humber Ports	2	364,424	....	50,985
Scotland E. Coast	.....	180,396	....	76,749
Scotland W. Coast	.....	270,972	110	80,892
Other ports E. Coast	.....	.....	....	131
Total	24,944	3,100,402	1,648	830,934

It will be seen that exports of British coal to the U. S. and Canada aggregated nearly 4,000,000 tons last year, practically all new business over and above 1921 movement. There are also reported certain shipments to the West Indies and Central America amounting to upwards of 25,000 tons, although no British coal went to those destinations in 1921. This represents a loss to our producers that may be increased if the U. M. W. forces mining costs too high.

Oil Bunkering Stations.

According to the calculations of a foreign contemporary there are oil bunkering stations in 257 of the 400 leading ports of the world. Of these 113 stations are in the Americas, 77 in Europe, 47 in Asia, 12 in Africa and seven in Australia

BRITISH COAL TRADE

Number of Persons Employed and Coal Raised During 1921—Also Distribution for Consumption.

District	Persons employed			Coal raised. Tons
	Below ground	Above ground	Total	
England and Wales.				
Northumberland	45,968	12,662	58,630	8,025,104
Durham	125,603	32,974	158,577	21,768,459
Cumberland and Westmoreland	8,888	2,631	11,519	1,336,588
Lancashire and Cheshire	84,927	21,896	106,823	13,098,821
Yorkshire, South	85,832	21,895	107,727	18,490,672
Yorkshire, West	53,874	14,026	67,900	9,991,530
Nottinghamshire	40,350	10,295	50,645	8,291,384
Derbyshire (except South Derbyshire)	47,179	11,352	58,531	9,728,657
Derbyshire, South	4,374	1,021	5,395	750,926
Staffordshire, North	27,679	7,130	34,809	4,128,468
Cannock Chase	18,227	6,055	24,282	3,660,528
Staffordshire, South, and Worcestershire	5,292	2,070	7,362	984,457
Leicestershire	10,192	2,516	12,708	2,158,333
Warwickshire	16,846	5,077	21,923	3,434,422
Shropshire	3,351	766	4,117	515,519
Forest of Dean	5,567	1,480	7,047	693,781
Somerset	4,923	977	5,900	682,520
Bristol	1,779	397	2,176	229,233
Kent	1,556	520	2,076	259,613
South Wales and Monmouth	194,779	37,264	232,043	30,572,003
North Wales	13,394	3,314	16,708	1,816,502
Total: England and Wales	800,580	196,318	996,898	140,617,520
Scotland.				
Fife and Clackmannan	22,255	5,687	27,942	4,926,699
Lothians (Mid and East)	11,222	3,307	14,529	2,779,265
Lanarkshire, Linlithgow, Stirling, Renfrew and Dumbarton	60,754	15,096	75,850	12,001,232
Ayrshire, Dumfries and Argyll	12,524	2,929	15,453	2,837,928
Total: Scotland	106,755	27,019	133,774	22,545,124
Total: Ireland	731	184	915	88,537
Total: United Kingdom	908,066	223,521	1,131,587	163,251,181
Total: United Kingdom, 1920	973,586	253,299	1,226,885	229,532,081

Source of Distribution.

APPROXIMATE DISTRIBUTION COAL AVAILABLE FOR CONSUMPTION 1920 AND 1921

Consumer	1921. Tons	1920. Tons
Coke ovens (metallurgical coke):		
Total quantity	6,886,000	18,855,000

Consumer	1921. Tons		1920. Tons	
Less exported	488,000		1,504,000	
Net home consumption	———	6,398,000	———	17,351,000
Gas Works:				
Total quantity	16,652,000		18,555,000	
Less exported	739,000		1,284,000	
Net home consumption	———	15,913,000	———	17,271,000
Manufactured fuel:				
Total quantity	965,000		2,266,000	
Less exported or shipped for use of steamers engaged in foreign trade	885,000		2,107,000	
Net home consumption	———	80,000	———	159,000
Electricity generating stations* ..		6,524,000†		7,357,000†
Railway companies (for locomotive use)		10,492,000		13,837,000
Vessels engaged in coastwise trade (bunkers)		1,234,000		1,703,000
Blast furnaces‡ (pig iron manufacture)		651,000		2,062,000
Collieries (engine fuel) Miner's coal ..... Domestic use§ ..... General manufactures and all other purposes		18,550,000		23,800,000
		69,221,000		102,242,000
Total		129,063,000		185,782,000

* Belonging to authorized undertakings and to railway and tramway authorities. † Including coke. The figures relate to the year ended March 31, 1922 and 1921, respectively, and to Great Britain. ‡Exclusive of metallurgical coke included above, viz., 3,075,947 tons in 1921, and 10,036,219 tons in 1920. § From 36 to 37 million tons of raw coal, it is estimated, were available for domestic use in the year 1920. The corresponding quantity for 1921 cannot be stated.

Production of French Coal Mines in Devastated Areas.

Production of French coal mines in the devastated areas during 1921 totaled 5,340,103 metric tons, an increase of 2,892,150 tons, or 118 per cent, compared with the production of 2,447,953 tons during 1920 from the same mines.

In a census taken recently the Northern West Virginia Coal Operators' Association learned that there were 29,176 coal miners in the region during the early part of 1922 and 28,530 in the fall, after the strike was over. This was against 29,759 in 1921 and 23,526 in 1920. The census taken in 1921 showed that 16,209, or 54 per cent, were Americans. The next largest group was Italians, at 3,725, and then negroes at 2,305. There were 32 different nationalities, but miners from countries under the domain of Great Britain were scarce, as there were but 14 Welsh, 128 English, 156 Irish and 46 Scotch.

Italian Coal Trade in 1922.

In the table given below is indicated in detail the heavy freights to Genoa and other Tyrrhenian ports during 1922:

	From Cardiff.				From the Tyne.				From Glasgow.			
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
January	12	6–13	0		12	6–13	0		12	6–13	6	
February	12	6–13	6		12	6–13	6		12	6–13	6	
March	12	6–13	9		12	9–14	0		13	0–14	0	
April	12	6–14	0		13	0–14	0		13	3–14	0	
May	16	6–13	6		11	0–14	0		11	6–14	0	
June	10	0–12	0		10	0–12	3		10	0–12	0	
July	10	0–13	6		10	6–13	6		10	0–12	6	
August	10	6–13	6		10	9–12	6		10	3–12	6	
September	10	6–11	6		9	6–12	6		10	9–12	3	
October	10	9–12	6		11	6–12	6		11	3–12	3	
November	10	0–12	0		10	6–12	0		10	6-12	0	
December	10	0–11	0		10	3–11	0		10	0–11	0	

Prices.

The following table gives an idea of the great oscillations in the prices of the most important English coals exported to Italy, caused in part through differences in the foreign exchange, and in part through a larger or smaller demand of the Italian consumers:

	From Cardiff. Lire.	Best English gas coal. Lire.	Best English splint coal. Lire.	Best English anthracite. Lire.	English metal coal. Lire.	American steam, gas, splint coals. Lire.
January	200–205	195–200	210–215	310–320	320–330	170–200
February	205–210	195–200	200–210	310–320	300–320	190–200
March	195–200	190–195	195–200	290–300	295–310	185–195
April	185–190	165–175	180–190	250–300	280–300	165–190
May	185–190	165–170	160–165	235–240	240-250	180-185
June	190–195	165–170	165–170	265–275	255–260	180–190
July	225–230	200–205	189–195	315–320	285–295	190–200
August	225–230	205–210	215–225	340–350	280–290	200–205
September	225–230	195–200	215–230	350–360	310–320	195–200
October	230–235	220–225	225–246	340–350	320–330	210–220
November	205–210	195–200	210–230	275–280	310–320	190–200
December	195–200	180–185	190–200	270–280	265–275	185–195

New Brunswick Coal Fields.

Coal seams of more or less importance have been discovered in many places in the Province of New Brunswick, but the most valuable and the only ones being operated are those in the Grand Lake field, about 70 miles north of St. John. The total area of the field is over 112 square miles, and it is estimated to contain from 52,000,000 to 155,000,000 tons of coal. Practically all of the coal produced is sold to the railroads.

Panama Canal Bunkering Facilities.

The Panama Canal operates coaling plants at both ends of the canal, the Cristobal plant having a capacity of about 500,000 tons and the Balboa plant about 200,000 tons. There are no stocks of coal carried at any points in the Republic. Following is an extract from the annual report of the Governor of the Canal Zone for the fiscal year ended June 30, 1921, showing the amount of coal supplied by the plants at Cristobal and Balboa during the fiscal years ended June 30, 1920 and 1921:

Supplied to—	1920 Tons	1921 Tons
Commercial vessels	479,488	424,680
Panama Railroad	24,519	9,622
Panama Canal	19,409	20,817
United States Army	10,960	8,418
United States Navy	18,739	(1)
Miscellaneous	5,034	5,278
Total	558,149	468,815

[1]Navy maintains its own supply, from which 76,129 tons were delivered.

Vessels passing through the Panama Canal or docking at the Canal Zone ports are provided with ample facilities for coaling. The Cristobal plant carries 100,000 to 150,000 tons in stock and the Balboa plant from 50,000 to 75,000 tons. These plants bunker ships at the rate of 100 to 500 tons an hour, or practically as fast as the nature of the vessel will permit.

Growth of British Export Trade.

In the course of seven decades the British export trade increased enormously, as shown by the following table of gross tons:

Countries	1848	1890	1900	1910	1920	1921	1922
France	515,975	5,093,329	8,314,697	9,588,892	11,690,922	6,395,651	13,579,417
Germany	170,038	3,350,512	5,938,178	10,005,515	13,457	817,877	8,345,606
Russia	83,582	1,593,189	3,116,099	3,224,344	92,879	138,878	584,069
Sweden	37,995	.....	2,986,579	3,991,207	1,372,478	1,232,904	2,522,820
Norway	18,800	2,313,817	1,342,759	1,982,599	800,917	694,316	1,566,969
Denmark	145,286	1,325,585	2,056,990	2,712,681	1,040,107	1,803,561	2,866,233
Belgium	3,882	.....	1,152,109	1,559,309	671,385	618,011	3,489,419
Holland	184,434	527,460	1,812,257	2,243,658	239,067	1,787,678	6,067,789
Spain	53,548	1,905,618	1,695,820	2,876,276	290,141	1,021,472	1,711,021
Italy	46,927	3,910,847	5,115,125	8,784,504	2,905,217	3,383,083	6,341,743
Portugal	33,066	627,529	569,901	1,136,496	301,413	436,365	784,356
Total	1,329,764	20,994,673	34,449,635	64,520,320	24,931,853	24,660,552	64,198,384

Exports of bituminous coal from the Florida customs district during 1922 amounted to 47,709 gross tons; anthracite exported amounted to 488 tons and coke 2,972 tons.

The Weather at New York.

Official data regarding climatic conditions at New York since the establishment of the Weather Bureau is presented below. The table shows the mean (average) monthly and annual temperatures since the begining of 1871, also the normal temperature of each of the twelve months of the year. It will be seen that one year's weather is pretty much like another; taken as a whole, the law of averages operating to prevent any very radical departure from the normal annual temperature of 52 degrees.

Here are the details:

Monthly and Annual Mean Temperatures.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1871....	30.4	31.8	43.6	53.6	60.8	69.1	71.9	73.0	60.8	54.9	39.3	29.7	51.6
1872....	29.4	30.3	28.9	47.3	61.1	70.6	76.0	75.5	65.2	55.3	40.4	27.4	50.6
1873....	28.1	28.8	35.6	45.7	56.0	68.8	73.5	71.4	64.9	56.3	37.3	36.3	50.2
1874....	34.5	31.4	38.0	41.3	58.2	70.0	73.6	70.6	68.1	55.1	42.8	33.8	51.4
1875....	25.3	23.2	32.6	42.6	58.5	67.5	72.7	71.9	64.4	52.3	38.9	33.0	48.6
1876....	33.9	31.8	35.2	46.1	58.0	70.7	76.4	72.5	61.8	49.7	44.5	25.1	50.5
1877....	27.6	35.6	36.6	48.0	59.0	68.8	73.8	74.3	66.2	56.6	45.5	39.3	52.6
1878....	32.1	34.6	43.8	52.7	58.2	65.8	74.6	72.9	67.0	57.4	43.6	32.4	52.9
1879....	26.8	27.6	38.4	45.9	60.8	68.8	73.1	70.9	63.2	59.8	43.1	37.3	51.3
1880....	39.8	36.3	35.7	48.7	64.8	70.7	73.2	70.7	65.7	53.8	39.7	27.7	52.2
1881....	25.8	29.5	36.9	46.0	60.2	64.2	72.6	73.1	72.2	59.1	46.3	40.7	52.2
1882....	30.5	35.6	39.8	46.1	53.5	68.2	73.8	71.7	66.9	58.5	41.7	32.2	51.5
1883....	27.8	31.4	33.6	46.6	59.1	69.5	73.3	70.8	63.1	53.7	45.0	33.7	50.6
1884....	26.2	35.1	37.5	47.6	58.8	68.7	70.1	71.5	69.6	56.1	43.2	34.6	51.6
1885....	29.2	23.1	29.7	47.7	56.2	67.3	74.2	70.8	64.1	54.5	44.8	36.0	49.8
1886....	25.8	28.5	36.9	50.3	58.5	65.6	72.9	71.0	67.1	56.5	45.3	30.8	51.0
1887....	30.1	33.7	34.3	47.7	62.9	68.2	76.7	71.4	63.1	54.7	43.7	36.1	51.9
1888....	26.0	31.8	32.9	48.4	59.8	71.8	72.6	74.8	66.2	51.2	46.8	36.0	51.5
1889....	37.6	28.0	41.5	51.6	62.0	70.4	73.5	71.5	65.8	52.0	46.9	41.4	53.5
1890....	40.2	40.4	37.5	51.0	60.6	70.4	73.4	72.3	66.8	55.5	45.9	31.4	53.8
1891....	34.7	37.5	37.8	52.0	59.9	69.6	70.8	73.6	70.1	54.2	43.8	41.8	53.8
1892....	30.3	33.0	34.6	49.9	59.4	72.0	74.8	73.9	66.0	55.4	42.6	31.3	51.9
1893....	23.3	29.6	36.2	47.8	59.0	69.4	74.8	74.4	64.4	57.6	44.2	35.1	51.3
1894....	34.6	29.6	44.5	49.6	60.8	70.6	76.1	72.8	69.8	57.2	42.2	36.8	53.7
1895....	30.1	25.2	36.4	47.7	59.4	70.0	70.8	73.8	69.7	51.0	46.0	36.9	51.4
1896....	27.6	30.2	32.1	50.4	63.8	66.5	73.4	73.0	64.8	51.9	48.0	32.1	51.2
1897....	29.4	32.6	39.2	48.6	59.3	65.2	72.8	71.0	65.4	56.3	44.1	35.8	51.6
1898....	32.2	33.0	43.7	46.8	56.6	68.9	74.1	74.3	68.9	57.6	44.6	34.4	52.9
1899....	30.8	26.9	38.4	49.6	61.0	72.2	73.8	73.6	65.2	58.2	45.4	36.4	52.6
1900....	33.2	31.6	35.0	51.1	60.8	71.4	76.4	76.8	70.8	60.8	48.7	35.2	54.3
1901....	31.5	25.6	38.6	49.4	58.6	71.4	78.1	75.6	68.4	56.0	39.7	34.4	52.3
1902....	29.2	28.5	44.0	50.6	60.2	68.2	73.6	71.4	65.9	56.9	50.0	32.2	52.6
1903....	30.6	34.4	47.5	52.2	64.1	64.0	74.2	69.2	65.4	56.6	41.4	30.1	52.5
1904....	24.1	25.0	36.4	46.4	63.6	69.2	73.6	72.2	65.9	53.3	41.4	28.2	49.9
1905....	27.5	24.6	40.0	49.8	60.5	68.8	75.4	72.2	66.8	56.9	43.8	37.7	52.0
1906....	37.3	31.2	34.9	51.7	61.8	71.5	74.8	75.3	70.2	56.1	44.9	32.7	53.5
1907....	32.2	24.4	40.8	45.0	55.3	66.2	74.8	72.0	67.8	52.5	45.2	37.8	51.2
1908....	32.0	28.1	41.4	50.6	61.3	71.6	76.8	72.5	67.8	59.6	44.7	35.2	53.5
1909....	33.2	37.3	38.3	49.5	60.4	70.5	73.4	71.6	65.6	53.2	47.7	31.4	52.7
1910....	32.4	31.4	44.7	54.0	60.2	68.0	77.8	72.2	68.4	58.2	41.6	28.0	53.1

Bituminous Coal Mining; Methods Used, 1921.

State	Mined by Hand	Shot Off the Solid	Mined by Machine	Steam shovel Pits	Not Reported	Total Production
Alabama	2,197,394	4,973,545	5,012,152	342,033	43,775	12,568,899
Arkansas ...	21,827	11,036,582	159,591	3,350	6,427	1,227,777
Colorado ...	4,403,048	475,553	4,182,342	.....	76,686	9,137,629
Georgia ...	.....	23,252	.....	10,563	.....	33,815
Illinois	3,833,728	19,473,525	45,609,876	586,203	99,431	69,602,763
Indiana	1,484,360	7,246,546	10,737,554	800,738	50,311	20,319,509
Iowa	572,754	3,227,867	698,443	.....	32,328	4,531,392
Kansas	258,956	2,772,340	34,269	367,207	33,869	3,466,641
Kentucky ...	1,565,959	3,423,731	26,509,773	741	88,066	31,588,270
Maryland ...	1,526,022	113,578	186,165	.....	1,975	1,827,740
Michigan ...	10,000	40,260	1,091,455	.....	.....	1,141,715
Missouri ...	453,440	1,215,841	1,063,127	782,243	36,970	3,551,621
Montana ...	666,451	947,714	1,106,567	.....	13,226	2,733,958
New Mexico	1,614,718	84,381	743,864	.....	13,979	2,456,942
N. Dakota .	37,243	328,946	336,848	122,889	38,977	846,903
Ohio	852,590	387,583	29,256,048	1,260,815	185,740	31,942,776
Oklahoma ..	21,184	1,189,953	1,908,959	230,059	12,468	3,362,623
Pennsylvania	38,401,118	2,185,598	73,842,026	488,253	1,096,947	116,013,942
Tennessee ..	1,409,752	1,789,562	1,239,611	2,406	18,995	4,460,326
Texas	656,848	271,251	44,740	.....	.....	972,839
Utah	870,982	137,220	3,070,582	.....	11,611	4,090,395
Virginia	229,507	1,421,176	5,841,695	.....	.....	7,492,378
Washington	1,171,434	1,041,112	131,566	.....	84,610	2,428,722
W. Virginia.	14,835,874	1,532,828	56,163,635	6,000	248,659	72,786,996
Wyoming ...	967,324	2,433,519	3,731,501	68,322	.....	7,200,666
Other States..	55,138	83,962	.....	.....	7,553	146,653
Total ...	78,117,651	57,857,425	272,702,389	5,071,822	2,202,603	415,951,890

Exports from Rochester District.

Exports of coal and coke from the Rochester customs district, by months, during calendar years 1921 and 1922 were:

Month	Anthracite		Bituminous		Coke	
	1921	1922	1921	1922	1921	1922
January	4,855	6,489	44,910	22,317	220	31
February	2,338	3,932	29,350	31,009	.....	41
March	4,117	3,805	27,507	55,072	12,266	41
April	30,751	1,544	38,210	11,476	157	55
May	84,303	3,633	37,117	3,910	215	..
June	68,380	506	35,915	10,056	104	..
July	51,395	57	40,982	7,915	.....	..
August	50,152	.....	40,936	4,502	.....	..
September	23,317	14,737	43,927	43,586	.....	23
October	32,723	80,641	41,014	101,561	.....	..
November	22,959	94,714	24,877	104,061	21	..
December	6,377	34,444	23,762	55,852	....	54
Total	381,667	244,502	428,507	451,317	12,983	245

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1911....	34.8	31.4	37.6	48.2	63.6	68.3	76.0	71.8	66.6	55.6	41.4	39.2	52.9
1912....	23.5	28.4	36.8	49.0	60.7	68.4	74.0	70.7	65.9	58.5	46.6	38.5	51.8
1913....	40.0	30.9	44.0	51.0	60.2	69.2	75.0	72.7	64.6	58.2	46.9	38.8	54.3
1914....	31.4	25.3	35.8	46.6	63.6	67.6	71.1	73.7	66.2	59.0	44.0	31.5	51.3
1915....	34.1	35.2	36.4	53.4	57.7	66.6	72.5	70.4	69.0	56.7	45.4	33.5	52.6
1916....	35.4	27.7	32.2	47.1	59.8	64.2	73.8	73.6	66.0	57.2	44.8	33.8	51.3
1917....	32.4	27.8	38.7	47.2	**53.2**	68.3	74.1	74.6	63.0	**52.0**	41.2	**25.0**	49.8
1918....	**21.6**	29.6	41.2	49.8	64.0	66.4	72.7	74.8	62.8	58.6	45.7	39.0	52.2
1919....	35.2	34.7	42.0	48.8	61.0	69.7	74.0	70.2	66.5	58.4	41.4	30.0	52.8
1920....	24.1	29.1	40.6	47.7	57.8	67.6	72.5	72.8	67.4	60.4	44.2	37.8	51.8
1921....	33.6	34.8	**48.3**	**55.4**	60.4	70.3	76.2	70.9	71.0	56.2	45.0	33.8	**54.6**
Normal.	30.2	30.7	37.5	48.1	59.3	68.5	73.5	72.2	66.5	55.6	44.0	34.4	51.7
1922....	29.0	34.5	41.3	51.0	63.6	70.6	72.7	71.4	67.4	57.6	45.4	34.3	53.1

NOTE.—Highest and lowest monthly and annual mean temperatures in bold-face figures.

Temperature Extremes During 50 Years.

The coldest and warmest days on record for each month of the year are shown below:

	Maximum.			Minimum.		
	Degrees.	Year.	Day.	Degrees.	Year.	Day.
January	67	1890	12	— 6	1875	10
February	69	1890	5	— 6	1899	11
March	78	1910	30	3	1872	5
April	91	1915	27	20	1874	5
May	95	1895	31	34	1880	1
June	97	1899	6	45	1907	2
July	99	1898	3	50	1873	15
August	98	1917	1	51	1885	27
September	100	1881	7	39	1912	30
October	88	1881	1	29	1917	31
November	74	1882	1	7	1875	30
December	68	1891	23	—13	1917	30

It is in this table that great variations appear. There is surely a bewildering array of warm and cold days at various times in the year, the range for each month's extreme being from 52 to 81 degrees and the maximum for the winter months running high above the minimum for the summer months.

Ruhr Valley Coal Production.

Coal production of the Ruhr Valley amounted to 97,350,000 tons in 1922, as against 94,114,785 in 1921, an increase of 3,235,215 tons. The following table shows the total production of 1921 and 1922 compared with that of the year 1913 in tons:

	1913	1921	1922		1913	1921	1922
Jan.	9,786,005	8,072 912	8,132,763	Aug.	9,795,236	8,068.065	8,336,773
Feb.	9,194,112	8,174,606	7,737,974	Sept.	9,696,397	7,853 871	8,265,688
March	9,181,430	7,685,185	9,014,278	Oct.	9,895,090	8,047,353	8,827,126
April	9,969,560	7,894,985	7,512,646	Nov.	8 932,276	7,772,658	8,596,214
May	9.261,448	6,954,607	8,081,951	Dec.	9,101,858	8,054,517	7.900,000
June	9,586,385	7,753,350	7,078,361	Year	114,550,153	94,114.785	97,350,000
July	10,150,347	7,782,676	7,864,200				

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SCRANTON, PA.

D. F. WILLIAMS
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Assistant General Sales Agent

C. B. FILLMORE
Assistant General Sales Agent

Central Pennsylvania Coal Production.

Production of coal in the central Pennsylvania field during 1922 and two years previous as reported by the Central Pennsylvania Coal Producers' Associations, (in net tons) was:

Month	Cent.Pa. 1920	Cent. Pa. 1921	United States 1921	% of Cent. Pa. 1921	Cent. Pa. 1922	United States 1922	% of Cent. Pa. 1922
Jan.	4,561,711	3,865,464	39,839,955	09.70	3,373,734	37,416,000	09.02
Feb.	3,763,510	3,238,092	30,794,118	10.52	3,864,409	40,952,000	09.44
Mar.	5,195,577	3,273,834	29,839,009	10,97	4,889,328	49,154,167	09.95
Apr.	4,428,955	2,774,445	28,410,212	09.77	661,282	16,985,833	03.89
May	4,286,615	3,184,479	34,316,229	09.28	700,521	20,275,000	03.61
June	4,621,636	3,282,991	32,509,142	10.10	862,303	22,159,165	03.89
July	4,890,843	2,947,438	30,842,150	09.56	781,329	17,015,835	04.59
Aug.	5,160,977	3,254,964	34,240,664	09.51	1,866,354	25,784,497	07.24
Sept. ...	5,347,084	3,196,245	35,013,944	09.13	4,243,696	41,167,667	10.31
Oct.	5,331,119	3,893,325	43,920,686	08.86	4,782,879	44,450,000	10.76
Nov.	5,170,560	3,219,666	35,894,489	08.87	4,358,137	46,436,666	09.39
Dec.	5,413,829	2,935,395	31,369,402	09.36	4,383,612	45,480,334	09.64
Total..	58,172,416	39,066,338	406,990,000	09.60	34,767,584	407,277,164	08.54
Per cent of U. S. Production...	10.39	9.60			08.54		

Coal Exports to Brazil.

Exports of bituminous coal to Brazil, by months, during 1922 and four years previous, with average price for 1919, 1920 1921 and 1922 were (gross tons):

Month	1918	1919	1920	1921	1922	Aver. Price 1919	1920	1921	1922
January	....	55,546	48,205	35,651	12,365	$6.33	$6.47	$7,98	$6.04
February ...	64,747	67,825	47,241	42,208	16,920	6.22	6.45	6.96	5.67
March	27,323	60,296	65,276	52,801	40,492	6.14	6.80	6.76	5.23
April	25,097	70,333	72,325	90,999	38,864	5.82	6.99	6.81	4.95
May	79,400	109,868	73,190	103,474	19,898	5.68	8.58	6.88	5.46
June	93,782	100,778	64,055	57,127	11,050	5.72	9.66	6.53	6.47
July	68,362	54,595	83,468	27,525	12,544	5,34	14.29	6.58	6.67
August	46,877	2,900	111,317	41,419	....	13.75	15.30	6.56	...
September .	33,829	20,722	135,561	24,411	....	6.96	12.99	6.16	...
October ...	38,461	71,957	98,240	15,892	....	6.43	13.65	6.09	...
November .	59,247	14,699	115,295	21,226	....	6.55	14.19	5.51	...
December ..	21,974	4.590	50,396	12,492	....	6.67	14.55	6.10	...
Total	559,099	634,109	966,029	527,225	152,133	...	...	...	...

The yearly consumption of coal in Brazil is approximately 1,250,000 tons, but would be much more if it were possible to obtain the full amount desired. It is used chiefly by steamships, railways, gas and electric light plants, and other industries in the following proportions:

Bunkering, 50 per cent; railways, 25 per cent; gas and electric light plants, 15 per cent; and other industries, 10 per cent.

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POWER HOUSE REQUIREMENTS

Electric Utility Stations Consumed Over 34 Million Tons in 1922.

In 1922 the public utility electric plants in the United States used 34,176,000 net tons of coal, according to the U. S. Geological Survey. This was a gain of over 2,500,000 tons as compared with 1921, but it was nearly 3,000,000 tons short of the 1920 requirements, for in that year the power stations used 37,124,000 tons.

However, the output of electricity as measured in kilowatt hours was larger in 1922 than in 1920, the figures being 47,676 million and 43,555 million, respectively. The 1922 output was the largest on record.

This increase in power output in the face of a reduced coal consumption is accounted for chiefly by the opening of new hydro-electric plants and the enlargement of old stations. In some parts of the country fuel oil and natural gas are used for generating electricity, but the oil requirements were about the same in 1922 as in 1920, and the natural gas consumption showed only a small growth. Most of the gain was at plants operated by water, although the more economical use of fuel was a factor. In connection with this latter feature, the Survey says:

"The total output of electricity by public utility power plants in 1922 was the largest ever produced, being 16.4 per cent greater than the 1921 output and nearly 10 per cent greater than the 1920 output, which is next to 1922 in size. The economies in the utilization of fuel and in plant operation were continued during the year, as the fuel consumption was only about 8.5 per cent greater than that for 1921, while the production of electricity by the use of fuel was 17 per cent greater than in 1921."

Why Cheap Mines Are a Menace

Owners of new mines and those cheaply operated will of course take exception to the thought that anything should be done to limit their business activities, but it is a fact that the operation of such plants is not altogether to the public interest.

While they may afford fuel at a reduced cost today, their continuance as cheap market factors means that high-cost mines will have to be abandoned, and in that event millions, or in fact billions, of tons of coal will be lost for future use by the public.

There has been ample illustration heretofore of the loss involved by "hogging the mine," getting out only the coal that could be produced cheaply, and if the number of low cost mines becomes greater, if the coal in sight now at many operations cannot be recovered from those operations in the near future, if the companies fail and new interests in future years have to go back and recover the tonnage through other openings, the cost will be such as to offset present day gains by the public.

The thoughts expressed are not original with us. The United States Geological Survey and other expert advisers on coal matters have often referred to the loss to the public by reason of faulty mining engendered by the necessity for cheap production.

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Uniform in Size—For Heater—Stove—Grate

NO BONE	*ALL*	MEANS
NO SLATE	*TOGETHER*	QUICK KINDLING
NO CLINKERS	*A*	QUICK FIRE
NO SMOKE	*SATISFIED*	PROMPT MEALS
NO SOOT	*HOUSEHOLD*	EASY SERVICE

FUEL VALUE OF WOOD

How It Compares with Coal as Regards Amount of Heat It Will Give.

In view of the interest being taken in the matter of substitutes for anthracite, the following facts regarding the heating value of wood, prepared by A. E. Moss, forester of the Connecticut Agricultural College, may be of interest:

While a cord of wood is accepted as a pile of wood 4 ft. high, 4 ft. wide, 8 ft. long, and containing 128 cu. ft., it seems that cords of the same dimensions may vary largely in contents. The average cord of wood contains 85 cu. ft. of wood and 43 cu. ft. of air.

Straight sticks and large sizes give the greater content of wood, while small, crooked sticks give the least wood and the most air or waste space. Big, straight sticks are better than small straight sticks, because there is less space taken up by bark.

The shorter the sticks the closer they will pile. A cord of wood cut into 16-in. lengths will pile into a space of about 105 cu. ft., while a cord of wood cut into 12-in. lengths will occupy only 95 cu. ft. A cord of wood, thrown loosely into a box, will occupy 140 cu. ft. In other words, a cord of wood is not always what it seems.

Wood is made up chemically as follows: Carbon, 49 per cent; oxygen, 44 per cent; hydrogen, 6 per cent; ash, 1 per cent. Wood that has been air-dried contains about 15 to 20 per cent of water.

A pound of absolutely dry wood will give 7,000 to 9,000 British thermal units, while a pound of coal will give 12,000 to 15,000 British thermal units.

Addition of moisture, resins, gums, etc., in wood changes its heat values. For best results wood should be air dried for one year before used as fuel. Wood dries more rapidly when split.

Comparative value of air-dried fuel wood, based upon hickory as 100 per cent, is as follows: Hickory, 100; white oak, 93; black birch, 93; sugar maple, 86; white ash, 90; red maple, 75; elm, 70; gray birch, 70; chestnut, 60; hemlock, 60.

Coal Shipments on the Kanawha River.

Shipments by water in the calendar years named from collieries below the Kanawha Falls are stated by the Resident Engineer in charge of the United States navigation works to have been as follows:

Year.	Tons.	Year.	Tons.	Year.	Tons.
1911	1,346,140	1915	1,205,530	1919	741,900
1912	1,276,060	1916	1,366,400	1920	1,320,180
1913	1,342,800	1917	1,428,900	1921	938,900
1914	1,052,560	1918	1,091,640	1922	727,100

Lock No. 11, Kanawha River, is located about one and one-half miles above Point Pleasant, W. Va., the junction of the Kanawha and Ohio Rivers.

The Lehigh Coal & Navigation Co.

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WORLD COAL PRODUCTION 1921

Business Depression Affected Fuel Trade in Practically All Countries.

The world's coal production in 1921 dropped back to the level of 1909. The total output was 1,120,000,000 metric tons, a decrease of nearly 200,000,000 tons when compared with 1920. The chief factors in the decrease were the British miners' strike and more important—a world-wide industrial depression. The following table shows the trend of production for the last 13 years:

Year	Production (in part est.)	Per cent produced by U. S.	Year	Production (in part est.)	Per cent produced by U. S.
1909	1,110,000,000	37.5	1916	1,257,000,000	42.7
1910	1,160,000,000	39.2	1917	1,325,000,000	44.6
1911	1,189,000,000	37.9	1918	1,331,000,000	46.4
1912	1,249,000,000	38.8	1919	1,168,000,000	43.1
1913	1,342,000,000	38.6	1920	1,317,000,000	45.4
1914	1,207,000,000	38.7	1921	1,120,000,000	40.0
1915	1,189,000,000	40.6			

The figures for the years 1914-1918 in this table are revised materially from those hitherto published by the Geological Survey, to conform to more accurate reports from some of the countries affected by the war. They are still subject to revision.

The term "coal" as used by the Geological Survey includes lignite, and the production for the world is simply the total of the quantities reported, without attempt to reduce inferior coals to an equivalent tonnage of coals of higher rank. When possible however, lignite is shown separately from bituminous. The unit used is the metric ton of 2,205 pounds, the approximate equivalent of the long or gross ton. It is not, however, exactly the same, and the translation from net or gross tons to metric tons gives many of the figures an unfamiliar look.

Coal Produced in the Principal Countries

(In metric tons of 2,205 lbs.)

Country	1920	1921
North America:		
Canada: coal	11,812,871	10,636,471
lignite	3,275,304	2,918,991
Greenland	2,308	2,200
Mexico	(a)	(a)
United States:		
anthracite	81,282,000	79,400,000
bituminous and lignite	515,886,000	369,200,000
South America:		
Argentina	(a)	(a)
Brazil	(a)	(a)
Chile	1,060,585	(a)

THORNE, NEALE & CO., INC.

Franklin Bank Building Philadelphia, Penna.

AGENTS and DISTRIBUTORS

Anthracite Bituminous COAL

BUCK RUN — NEW CASTLE
Locust Run
(Washery)

SONMAN SHAFT COAL CO.
"B" Vein—"C" Prime—"E" Vein

SMITHING
(1¼" screened)

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GAS COALS
WESTMORELAND—YOUGHIOGHENY—FAIRMONT

New York Office: 17 Battery Place

Branch Offices:

Buffalo Chicago Scranton, Pa. Baltimore Mauch Chunk, Pa.

Country	1920	1921
Colombia	(a)	(a)
Peru	361,075	(a)
Venezuela	30,377	(a)
Europe:		
Austria: coal	132,864	137,470
lignite	2,408,865	2,398,284
Belgium	22,388,770	21,807,160
Bulgaria	757,250	750,000
Czechoslovak Republic:		
coal	11,143,221	11,648,399
lignite	19,943,258	11,050,712
France: coal	24,300,000	28,240,887
lignite	1,000,000	735,608
Germany: coal	*b* 140,757,433	*b* 145,610,000
lignite	111,634,000	123,011,000
Greece	182,880	134,000
Hungary	4,963,060	6,043,745
Italy: coal *c*	151,862	111,400
lignite *c*	1,571,735	1,019,700
Netherlands: coal *d*	4,115,629	4,167,960
lignite	1,395,851	122,000
Norway	(a)	(a)
Poland	6,660,145	7,107,214
Portugal	169,165	(a)
Rumania	1,505,184	(a)
Russia	6,162,000	9,851,000
Spain: coal	5,420,704	5,011,429
lignite	552,425	408,684
Spitsbergen	*e* 120,000	(a)
Sweden	439,584	(a)
Switzerland	74,590	10,714
United Kingdom	233,216,222	166,992,000
Yugo-Slavia	3,224,324	(a)
Asia:		
British India	17,356,889	17,200,000
China	19,484,896	(a)
Chosen	(a)	(a)
Federated Malay States	251,896	(a)
Indo-China	700,267	(a)
Japan (including Taiwan and Karafuto)	30,819,898	24,500,000
Russia	1,537,000	2,384,100
Turkey	*f* 700,000	(a)
Africa:		
Algeria	7,793	(a)
Nigeria (southern)	183,013	(a)
Rodesia (southern)	524,796	521,404

G. B. ST. GEORGE.
President

TELEPHONE
CORTLAND 1638

L. V. BERMINGHAM,
Secretary and Treasurer

ST. GEORGE COAL CO.

149 BROADWAY, NEW YORK

Anthracite - Bituminous

D., L. & W. Coal Co. P. & R. Coal & Iron Co.
Lehigh Valley Coal Sales Co.

Crozer-Pocahontas Company

1503-09 North American Building
PHILADELPHIA

Shippers, Exporters and Bunker Suppliers of

Standard Pocahontas Coal

2,000,000 TONS ANNUALLY

CHICAGO
1105 Fisher Bldg.

NORFOLK, VA.
Citizens Bank Bldg.

BLUEFIELD, W. VA.
Law & Commerce Bldg.

LONDON
96 Gresham House

BOSTON, MASS.

Country	1920	1921
Tunis	31,000	(a)
Union of South Africa	10,408,497	10,331,886
Oceanica:		
Australia	13,176,426	13,073,845
British Borneo	(a)	(a)
Dutch East Indies	1,095,718	(a)
New Zealand	1,873,296	(a)
Philippine Islands	58,888	(a)
Totals	1,317,000,000	1,120,000,000

a Estimate included in total. *b* Includes Saar Basin. *c* Includes new provinces. *d* Includes slack. *e* Shipments to Norway and Sweden. *f* Estimate based on incomplete data.

By-Product Coke Trade.

The final report of the U. S. Geological Survey covering the by-product coke industry for 1921 shows some of the salient features:

By-product ovens:

In existence Dec. 31, 1921.....11,141
New ovens completed during war.....483
Under construction at end of year.....85

Oven capacity (maximum estimated) at end of year:

Daily (net tons of coke).....120,149
Annual (net tons of coke).....43,854,000

Coal charged into ovens:

Quantity (net tons).....28,813,111
Average value (per net ton).....$4.82

By-product coke produced (net tons).....19,749,580
Average yield of coke from coal (per cent).....68.5
Coke used by producer (net tons).....13,470,396

Furnace and foundry coke sold:

Quantity (net tons).....3,329,709
Average value (per net ton).....$7.47

Domestic and other coke sold:

Quantity (net tons).....1,679,911
Average value (per net ton).....$8.22

Screenings and breeze:

Produced (net tons).....1,831,110
Used by producer (net tons).....1,472,619
Sold (net tons).....205,867
Average value (per net ton).....$2.30

Taking a dozen years together, it is seen that in only a few of them has the time-honored contract season been arranged for and carried out according to the established schedule of years ago.

The Delaware, Lackawanna & Western Coal Company

SOLE VENDERS OF

J. F. BERMINGHAM, President

H. A. SMITH, Vice-President

120 BROADWAY, NEW YORK

J. H. Abbott, Tidewater Sales Agent,
120 Broadway, New York.

S. G. Memory, Sales Agent,
Broad and Market, Newark, N. J.

A. W. Decker, Sales Agent,
Scranton Life Bldg., Scranton, Pa.

John J. Town, Sales Agent,
64 Martin Building, Utica, N. Y.

H. W. Marshall, Salesman,
1620 W. Fayette Street, Syracuse, N. Y.

Ogdensburg Coal & Towing Co.,
Sales Agents,
134 McCord Street, Montreal, Que.

E. H. Read, Sales Agent,
924 Prudential Bldg., Buffalo, N. Y.

W. B. Palmer, Sales Agent,
Fenobscot Building, Detroit, Mich.

L. R. Schenck, Sales Agent,
Spitzer Bldg., Toledo, O.

Hedstrom-Schenck Coal Co., Sales Agents,
Old Colony Building, Chicago, Ill

Milwaukee-Western Fuel Co.,
Sales Agents,
14th Floor, Wells Bldg., Milwaukee, Wis.

North Western Fuel Co., Sales Agents,
Merchants' Natl. Bank Bldg., St. Paul.
Duluth, Minn. Superior, Wis.

Cubic Area of Various Coals.

	Pounds in Cubic Feet	Cubic Feet Per Net Ton
Anthracite—		
Buckwheat	57.0	35.1
Chestnut	57.3	34.9
Egg	55.1	36.3
Egg, Small	55.7	35.9
Egg—Free Burning	56.07	35.69
Nut—Free Burning	56.88	35.16
Pea	54.8	36.5
Stove	56.0	35.7
Stove—Free Burning	56.33	35.5
Bituminous—		
Bell County, Ky., Lump	44.4	45.0
Bell County, Ky., Nut and Slack	53.4	37.4
Carterville Egg	51.8	38.6
Carterville Nut	46.1	43.4
Carterville No. 2 Washed Nut	48.1	41.6
Carterville 1½-inch Screenings	54.9	36.4
Cuba, Ill., Screenings	53.6	37.3
Franklin County, Ill., 6″ Lump (Christopher)	47.8	41.8
Franklin County, Ill., Egg (Christopher)	47.9	41.8
Franklin County, Ill., Egg (Small)	43.5	46.3
Franklin County, Ill., Range (Zeigler)	45.9	44.3
Franklin County, Ill., Screenings	50.1	39.9
Fulton County, Ill., Screenings (Cuba)	53.1	37.3
Green County, Indiana, Mine Run	53.3	37.5
Grundy County, Ill., Nut Pea (washed)	48.8	40.9
Harlan County, Ky., Lump	44.4	45.0
Harlan County, Ky., Nut Pea (washed)	48.8	40.9
Harrisburg Screenings	52.8	37.9
Hocking Lump	50.2	39.8
Illinois, Typical	47.22	42.35
Indiana Block	43.	46.5
Iowa Lump	46.51	43.
Iowa Screenings	49.3	40.5
Jackson, Ohio, Lump	54.2	36.9
Kentucky Dean Seam, Lump and Egg	49.8	40.2
Knox Co., Ky., Egg	49.7	40.2
Knox Co., Ky., Lump	49.8	40.2
Knox County, Ky., Nut and Slack	52.2	38.3
Knox County, Indiana, Screenings	49.9	40.0
Lehigh Broken	56.85	35.18
Lehigh Buckwheat	54.04	37.01
Lehigh Cupola	55.52	36.02
Lehigh Dust	57.25	34.93
Lehigh Egg	57.74	34.63
Lehigh Lump	55.26	36.19
Lehigh Nut	58.26	34.32
Lehigh Pea	53.18	37.6
Lehigh Stove	58.15	34.39
McDowell County, W. Va., Lump (Splint)	46.4	43.1
McDowell County, W. Va., Lump	53.4	37.5
McDowell Mine Run (Pocahontas)	56.9	33.6
Maryland Smithing (Georges Creek)	64.4	31.1
Ohio Cannel	49.18	40.66
Pike County, Ind., 1¼″ Screenings	53.2	37.6
Pike County, Indiana, Washed Nut	45.7	43.8
Pike County, Indiana, Mine Run	51.0	39.2
Pocahontas Egg and Lump	52.27	38.28

ROBINSON, HAYDON & CO.

ESTABLISHED 1874

143 LIBERTY ST. NEW YORK

ANTHRACITE and BITUMINOUS

COAL

STEAM SIZES A SPECIALTY

BERTHA COAL COMPANY

CHAMBER OF COMMERCE BUILDING

PITTSBURGH, PA.

SAWARD'S JOURNAL

covers completely the coal trade east of the Mississippi. No better medium for reaching enterprising retailers and large consumers in seaboard territory is to be found. Saward's Journal goes directly to leading interests and its advertising pages show that it has the patronage of many of the largest and best known producers and middle houses.

Get in line with the representative concerns of the industry!

F. W. SAWARD. Editor and General Manager 15 Park Row, New York

	Pounds in Cubic Feet	Cubic Feet Per Net Ton
Pocahontas Mine Run.	59.6	33.6
Pittsburgh	46.48	43.03
Saline County, Ill., Screenings	52.8	37.9
Sangamon County, Ill., No. 4 Washed Nut.	44.8	44.6
Sangamon County, Ill., Washed screenings..	50.1	39.9
Schuylkill Anthracite, Buckwheat	59.6	33.6
Schuylkill Chestnut ..	58.6	34.1
Schuylkill Large Egg.	53.7	37.2
Schuylkill Pea	55.	36.4
Schuylkill Range	58.5	34.2
Schuylkill Small Egg..	55.	36.4
Scranton Buckwheat..	57.6	34.7
Scranton Chestnut....	57.4	34.8
Scranton Large Egg..	57.1	35.
Scranton Range	54.5	36.7
Scranton Small Egg..	56.6	35.3
So. Wilmington W., Nut and Pea.....	48.8	40.9
Splint Block	46.4	43.1
Susquehanna Buck....	53.9	37.1
Susquehanna Chest....	56.1	35.7
Susquehanna Lar. Egg.	54.7	36.6
Susquehanna Pea	54.6	36.6
Susquehanna Range ..	55.2	36.2
Susquehanna Small Egg	55.5	36.
Tenn. Nut and Pea (Washed)	46.8	42.7
Vermilion County, Indiana, Egg (Forked)	42.6	46.9
Vermilion County, Ind., Egg (Shoveled)....	44.5	44.9
Vermilion County, Ind., Lump (Forked)	45.0	43.4
Vermilion County, Indiana, Nut	47.0	42.6
Vermilion County, Indiana, Mine Run....	58.9	34.0
Vermilion County, Indiana, Screenings ..	53.2	37.6
Vigo County, Indiana, Mine Run	49.2	40.6
Williamson County, Ill., 1½" Screenings	54.9	36.4
Williamson County, Ill., No. 2 Washed nut	48.1	41.6
Williamson County, Ill., No. 4 Washed Nut	46.1	43.4
Williamson County, Ill., No. 5 Washed Nut	45.5	44.0
Williamson County, Ill., Egg (Carterville)	51.8	38.0
Williamson County, Ill., Nut (Washed).	49.1	40.7
Youghiogheny ¾" Lump	66.8	29.9
Charcoal— Hardwood	19.	105.25
Pine	18.	111.11
Coke	28.	71.43
Egg-Solvay	28.6	69.9
Chestnut-Solvay	31.9	62.6
Connellsville	26.3	76.04

Coal Consumption of Wisconsin.

A dispatch sent out from Milwaukee early in the winter by a press association stated that a survey of the coal situation in Wisconsin showed that there was a supply of 12,000,000 of bituminous on hand, with 2,000,000 tons more expected before the close of lake navigation. Evidently there was something wrong with these figures, for an official of one of the largest coal companies in Wisconsin says he is under the impression that the total consumption of bituminous in that state is only about 8,000,000 tons per annum. He estimates the anthracite consumption at some 1,300,000 tons annually.

LEHIGH VALLEY COAL SALES CO.

shippers of

LEHIGH VALLEY ANTHRACITE

The Coal That Satisfies

WYOMING HAZLETON LEHIGH
PACKER CROSS CREEK

G. N. WILSON, *President*
W. R. EVANS, *Vice-Pres. and Genl. Sales Agent*

GENERAL OFFICES:

90 WEST STREET NEW YORK

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G. N. WILSON, *President*
W. R. EVANS, *Vice-Pres. and Genl. Sales Agent*

GENERAL OFFICES:

90 WEST STREET NEW YORK

Gross and Net Prices; 50 Cents to $15.00

The light figures represent price per gross ton (2,240 lbs.) The black figures will give corresponding price per net ton (2,000 lbs.).

Gross	Net	Gross	Net	Gross	Net	Gross	Net	Gross	Net	Gross	Net
$.50	$.45	$.95	$.85	$1.40	$1.25	$3.25	$2.90	$5.50	$4.91	$7.75	$6.92
.51	.46	.96	.86	1.41	1.27	3.30	2.95	5.55	4.96	7.80	6.96
.52	.46	.97	.87	1.42	1.28	3.35	2.99	5.60	5.00	7.85	7.01
.53	.47	.98	.88	1.43	1.29	3.40	3.04	5.65	5.04	7.90	7.05
.54	.48	.99	.88	1.44	1.29	3.45	3.08	5.70	5.09	7.95	7.10
.55	.49	1.00	.89	1.45	1.29	3.50	3.13	5.75	5.13	8.00	7.14
.56	.50	1.01	.90	1.46	1.30	3.55	3.17	5.80	5.18	8.05	7.19
.57	.51	1.02	.91	1.47	1.31	3.60	3.21	5.85	5.22	8.10	7.23
.58	.52	1.03	.92	1.48	1.32	3.65	3.26	5.90	5.27	8.15	7.28
.59	.53	1.04	.93	1.49	1.33	3.70	3.30	5.95	5.31	8.20	7.32
.60	.54	1.05	.94	1.50	1.34	3.75	3.35	6.00	5.36	8.25	7.37
.61	.54	1.06	.95	1.55	1.38	3.80	3.39	6.05	5.40	8.30	7.41
.62	.55	1.07	.96	1.60	1.43	3.85	3.44	6.10	5.45	8.35	7.46
.63	.56	1.08	.96	1.65	1.47	3.90	3.48	6.15	5.49	8.40	7.50
.64	.57	1.09	.97	1.70	1.52	3.95	3.53	6.20	5.54	8.45	7.54
.65	.58	1.10	.98	1.75	1.56	4.00	3.57	6.25	5.58	8.50	7.59
.66	.59	1.11	.99	1.80	1.61	4.05	3.62	6.30	5.62	8.55	7.63
.67	.60	1.12	1.00	1.85	1.65	4.10	3.66	6.35	5.67	8.60	7.68
.68	.61	1.13	1.01	1.90	1.70	4.15	3.71	6.40	5.71	8.65	7.72
.69	.62	1.14	1.02	1.95	1.74	4.20	3.75	6.45	5.76	8.70	7.77
.70	.63	1.15	1.03	2.00	1.79	4.25	3.79	6.50	5.80	8.75	7.81
.71	.63	1.16	1.04	2.05	1.83	4.30	3.84	6.55	5.85	8.80	7.86
.72	.64	1.17	1.04	2.10	1.88	4.35	3.88	6.60	5.89	8.85	7.90
.73	.65	1.18	1.05	2.15	1.92	4.40	3.93	6.65	5.94	8.90	7.95
.74	.66	1.19	1.06	2.20	1.96	4.45	3.97	6.70	5.98	8.95	7.99
.75	.67	1.20	1.07	2.25	2.01	4.50	4.02	6.75	6.03	9.00	8.04
.76	.68	1.21	1.08	2.30	2.05	4.55	4.06	6.80	6.07	9.05	8.08
.77	.69	1.22	1.09	2.35	2.10	4.60	4.11	6.85	6.12	9.10	8.13
.78	.70	1.23	1.10	2.40	2.14	4.65	4.15	6.90	6.16	9.15	8.17
.79	.71	1.24	1.11	2.45	2.19	4.70	4.20	6.95	6.21	9.20	8.23
.80	.71	1.25	1.12	2.50	2.23	4.75	4.24	7.00	6.25	9.25	8.26
.81	.72	1.26	1.13	2.55	2.28	4.80	4.29	7.05	6.29	9.30	8.30
.82	.73	1.27	1.13	2.60	2.32	4.85	4.33	7.10	6.34	9.35	8.35
.83	.74	1.28	1.14	2.65	2.37	4.90	4.38	7.15	6.38	9.40	8.39
.84	.75	1.29	1.15	2.70	2.41	4.95	4.42	7.20	6.43	9.45	8.44
.85	.76	1.30	1.16	2.75	2.46	5.00	4.46	7.25	6.47	9.50	8.48
.86	.77	1.31	1.17	2.80	2.50	5.05	4.51	7.30	6.52	9.55	8.53
.87	.78	1.32	1.18	2.85	2.54	5.10	4.55	7.35	6.55	9.60	8.57
.88	.79	1.33	1.19	2.90	2.59	5.15	4.60	7.40	6.61	9.65	8.62
.89	.80	1.34	1.20	2.95	2.63	5.20	4.64	7.45	6.65	9.70	8.66
.90	.80	1.35	1.21	3.00	2.68	5.25	4.69	7.50	6.70	9.75	8.71
.91	.81	1.36	1.21	3.05	2.72	5.30	4.73	7.55	6.74	9.80	8.75
.92	.82	1.37	1.22	3.10	2.77	5.35	4.78	7.60	6.79	9.85	8.79
.93	.83	1.38	1.23	3.15	2.81	5.40	4.82	7.65	6.83	9.90	8.84
.94	.84	1.39	1.24	3.20	2.86	5.45	4.87	7.70	6.88	9.95	8.88

WHITE OAK COAL COMPANY

Macdonald, West Va.

Sales and Distributing Agents for the New River Company's Famous

"WHITE OAK" SMOKELESS COAL LUMP, EGG, MINE RUN, SMITHING.

Shipments 10,000 tons daily.

TIDEWATER, BUNKER AND EXPORT SHIPMENTS
LAKE AND ALL RAIL SHIPMENTS
EAST, WEST AND SOUTH

A high grade Smokeless Coal, of a lumpy structure, clean and free from impurities.

It is high in Carbon, very low in Volatile and Ash, runs less than one per cent in Sulphur and will not clinker. It has always met and often exceeded the high standards of quality set by the Bureau of Mines covering all purchases of coal by the U. S. Government.

It is the most carefully prepared and most rigidly inspected coal coming out of the famous New River Smokeless Coal field of West Virginia, and in the lump and egg sizes makes an ideal domestic coal. The leading retailers in every community will almost invariably be found to be handling "WHITE OAK."

C. B. EBBERT, Manager of Sales
2 Rector Street, New York

OFFICES

Macdonald, W. Va.	Richmond, Va.	Chicago, Ill.
Greensboro, Va.	Indianapolis, Ind.	Norfolk, Va.

SEABOARD FUEL CORPORATION

ATLANTIC BUILDING
PHILADELPHIA

HIGH GRADE FUSING
LOW ASH VOLATILE SULPHUR

Bituminous Coals

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Editor and General Manager
15 Park Row, New York

Gross	Net	Gross	Net	Gross	Net	Gross	Net	Gross	Net	Gross	Net
10.00	8.93	10.85	9.69	11.70	10.45	12.55	11.22	13.40	11.97	14.25	12.72
10.05	8.97	10.90	9.73	11.75	10.49	12.60	11.25	13.45	12.01	14.30	12.76
10.10	9.02	10.95	9.78	11.80	10.54	12.65	11.29	13.50	12.06	14.35	12.81
10.15	9.06	11.00	9.82	11.85	10.60	12.70	11.34	13.55	12.10	14.40	12.86
10.20	9.11	11.05	9.87	11.90	10.63	12.75	11.38	13.60	12.14	14.45	12.90
10.25	9.15	11.10	9.91	11.95	10.67	12.80	11.42	13.65	12.19	14.50	12.94
10.30	9.20	11.15	9.96	12.00	10.72	12.85	11.47	13.70	12.24	14.55	12.99
10.35	9.24	11.20	10.00	12.05	10.76	12.90	11.52	13.75	12.28	14.60	13.04
10.40	9.29	11.25	10.05	12.10	10.80	12.95	11.56	13.80	12.32	14.65	13.07
10.45	9.33	11.30	10.09	12.15	10.85	13.00	11.60	13.85	12.37	14.70	13.10
10.50	9.38	11.35	10.14	12.20	10.90	13.05	11.65	13.90	12.42	14.75	13.16
10.55	9.42	11.40	10.18	12.25	10.94	13.10	11.69	13.95	12.46	14.80	13.22
10.60	9.47	11.45	10.22	12.30	10.98	13.15	11.74	14.00	12.50	14.85	13.26
10.65	9.51	11.50	10.27	12.35	11.03	13.20	11.78	14.05	12.54	14.90	13.30
10.70	9.56	11.55	10.31	12.40	11.08	13.25	11.83	14.10	12.58	14.95	13.35
10.75	9.60	11.60	10.36	12.45	11.12	13.30	11.88	14.15	12.63	15.00	13.38
10.80	9.64	11.65	10.40	12.50	11.17	13.35	11.92	14.20	12.68	15.05	13.43

Gross Tons Reduced to Net Tons and Pounds.

Cwt.			Cwt.			Cwt.		
Gross	Net	Lbs.	Gross	Net	Lbs.	Gross	Net	Lbs.
1	.01	112	8	.09	896	15	.17	1,680
2	.02	224	9	.10	1,008	16	.18	1,792
3	.03	336	10	.11	1,120	17	.19	1,904
4	.04	448	11	.12	1,232	18	1.00	2,016
5	.06	560	12	.13	1,344	19	1.01	2,128
6	.07	672	13	.15	1,456			
7	.08	784	14	.16	1,568			

Tons			Tons			Tons		
Gross	Net	Lbs.	Gross	Net	Lbs.	Gross	Net	Lbs.
1	1.02	2,240	40	44.16	89,600	79	88.10	176,960
2	2.05	4,480	41	45.18	91,840	80	89.12	179,200
3	3.07	6,720	42	47.01	94,080	81	90.14	181,440
4	4.10	8,960	43	48.03	96,320	82	91.17	183,680
5	5.12	11,200	44	49.06	98,560	83	92.19	185,920
6	6.14	13,440	45	50.08	100,800	84	94.02	188,160
7	7.17	15,680	46	51.10	103,040	85	95.04	190,400
8	8.19	17,920	47	52.13	105,280	86	96.06	192,640
9	10.02	20,160	48	53.15	107,520	87	97.09	194,880
10	11.04	22,400	49	54.18	109,760	88	98.11	197,120
11	12.06	24,640	50	56.00	112,000	89	99.14	199,360
12	13.09	26,880	51	57.02	114,240	90	100.16	201,600
13	14.11	29,120	52	58.05	116,480	91	101.18	203,840
14	15.14	31,360	53	59.07	118,720	92	103.01	206,080
15	16.16	33,600	54	60.10	120,960	93	104.03	208,320
16	17.18	35,840	55	61.12	123,200	94	105.06	210,560
17	19.01	38,080	56	62.14	125,440	95	106.08	212,800
18	20.03	40,320	57	63.17	127,680	96	107.10	215,040

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MINERS AND SHIPPERS OF

FAMOUS READING ANTHRACITE

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Milwaukee	**Minneapolis**	**St. Paul**	**Rochester**
Baltimore	**Washington**	**Reading**	**Detroit**

Tons		
Gross	Net	Lbs.
19	21.06	42,560
20	22.08	44,800
21	23.10	47,040
22	24.13	49,280
23	25.15	51,520
24	26.18	53,760
25	28.00	56,000
26	29.02	58,240
27	30.05	60,480
28	31.07	62,720
29	32.10	64,960
30	33.12	67,200
31	34 14	69,440
32	35.17	71,680
33	36.19	73,920
34	38.02	76,160
35	39.04	78,400
36	40.06	80,640
37	41.09	82,880
38	42.11	85,120
39	43.14	87,360

Tons		
Gross	Net	Lbs.
58	64.19	129,920
59	66.02	132,160
60	67.04	134,400
61	68.06	136,640
62	69.09	138,880
63	70.11	141,120
64	71.14	143,360
65	72.16	145,600
66	73.18	147,840
67	75.01	150,080
68	76.03	152,320
69	77.06	154,560
70	78.08	156,800
71	79.10	159,040
72	80.13	161,280
73	81.15	163,520
74	82.18	165,760
75	84.00	168,000
76	85.02	170,240
77	86.05	172,480
78	87.07	174,720

Tons		
Gross	Net	Lbs.
97	108.13	217,280
98	109.15	219,520
99	110.18	221,760
100	112.	224,000
200	224.	448,000
300	336.	672,000
400	448.	896,000
500	560.	1,120,000
600	672.	1,344,000
700	784.	1,568,000
800	896.	1,792,000
900	1008.	2,016,000
1,000	1120.	2,240,000
1,100	1232.	2,464,000
1,200	1344.	2,688,000
1,300	1456.	2,912,000
1,400	1568.	3,136,000
1,500	1680.	3,360,000
2,000	2240.	4,480,000
2,500	2800.	5,600,000

Table for Ascertaining the Price of a Number of Pounds at a Given Price per Ton of 2,000 Pounds.

Lbs.	$2.75	$3.00	$3.25	$3.50	$3.75	$4.00	$4.25	$4.50	$4.75	$5.00	$5.25
10	.01	.02	.02	.02	.02	.02	.02	.03	.03	.03	.03
20	.03	.03	.03	.04	.04	.04	.05	.05	.05	.05	.06
30	.04	.05	.05	.05	.06	.06	.07	.07	.07	.08	.08
40	.06	.06	.07	.07	.08	.08	.09	.09	.10	.10	.11
50	.07	.08	.08	.09	.09	.10	.11	.12	.12	.13	.13
60	.08	.09	.10	.11	.11	.12	.13	.14	.15	.15	.16
70	.10	11	.11	.12	.13	.14	.15	.16	.17	.18	.19
80	.11	.12	.13	.14	.15	.16	.17	.18	.19	.20	.21
90	.12	.14	.15	.16	.17	.18	.19	.20	.22	.23	.24
100	.14	.15	.16	.18	.19	.20	.22	.23	.24	.25	.27
200	.28	.30	.33	.35	.38	.40	.43	.45	.48	.50	.53
300	.41	.45	.49	.53	.56	.60	.64	.68	.72	.75	.79
400	.55	.60	.65	.70	.75	.80	.85	.90	.95	1.00	1.05
500	.69	.75	.81	.88	.94	1.00	1.07	1.13	1.19	1.25	1.32
600	.83	.90	.98	1.05	1.13	1.20	1.28	1.35	1.43	1.50	1.58
700	.96	1.05	1.14	1.23	1.31	1.40	1 49	1.58	1 67	1.75	1.84
800	1 10	1.20	1.30	1.40	1.50	1.60	1 70	1.80	1.90	2.00	2.10
900	1.24	1.35	1.46	1.58	1.69	1.80	1 92	2.03	2.14	2.25	2.37
1000	1 38	1.50	1.63	1.75	1.88	2.00	2.13	2.25	2.38	2.50	2.63
1100	1.51	1 65	1.79	1.93	2.06	2.20	2.34	2.48	2.62	2.75	2.89
1200	1.65	1.80	1.95	2.10	2.25	2.40	2.55	2.70	2.85	3.00	3.15

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1300	1.79	1.95	2.11	2.28	2.44	2.60	2.77	2.93	3.09	3.25	3.42
1400	1.93	2.10	2.28	2.45	2.63	2.80	2.98	3.15	3.33	3.50	3.68
1500	2.06	2.25	2.44	2.63	2.81	3.00	3.19	3.38	3.57	3.75	3.94
1600	2.20	2.40	2.60	2.80	3.00	3.20	3.40	3.60	3.80	4.00	4.20
1700	2.34	2.55	2.76	2.98	3.19	3.40	3.62	3.83	4.04	4.25	4.47
1800	2.48	2.70	2.93	3.15	3.38	3.60	3.83	4.05	4.28	4.50	4.73
1900	2.61	2.85	3.09	3.33	3.56	3.80	4.04	4.28	4.52	4.75	4.99

In the Higher Prices.

Lbs.	$5.50	$5.75	$6.00	$6.25	$6.50	$6.75	$7.00	$7.25	$7.50	$7.75	$8.00
10	.03	.03	.03	.03	.03	.03	.04	.04	.04	.04	.04
20	.06	.06	.06	.06	.07	.07	.07	.07	.08	.08	.08
30	.08	.09	.09	.09	.10	.10	.11	.11	.11	.12	.12
40	.11	.12	.12	.13	.13	.14	.14	.15	.15	.16	.16
50	.14	.15	.15	.16	.16	.17	.18	.18	.19	.19	.20
60	.17	.18	.18	.19	.20	.20	.21	.22	.23	.23	.24
70	.19	.20	.21	.22	.23	.24	.25	.25	.26	.27	.28
80	.22	.23	.24	.25	.26	.27	.28	.29	.30	.31	.32
90	.25	.26	.27	.28	.29	.30	.31	.33	.34	.35	.36
100	.28	.29	.30	.31	.33	.34	.35	.36	.38	.39	.40
200	.55	.58	.60	.63	.65	.68	.70	.73	.75	.78	.80
300	.83	.87	.90	.94	.98	1.01	1.05	1.09	1.13	1.16	1.20
400	1.10	1.15	1.20	1.25	1.30	1.35	1.40	1.45	1.50	1.55	1.60
500	1.38	1.44	1.50	1.56	1.63	1.69	1.75	1.81	1.88	1.94	2.00
600	1.65	1.73	1.80	1.88	1.95	2.03	2.10	2.18	2.25	2.33	2.40
700	1.93	2.02	2.10	2.19	2.28	2.36	2.45	2.54	2.63	2.71	2.80
800	2.20	2.30	2.40	2.50	2.60	2.70	2.80	2.90	3.00	3.10	3.20
900	2.48	2.59	2.70	2.81	2.93	3.04	3.15	3.26	3.37	3.49	3.60
1000	2.75	2.88	3.00	3.13	3.25	3.38	3.50	3.63	3.75	3.88	4.00
1100	3.03	3.17	3.30	3.44	3.58	3.72	3.85	3.99	4.13	4.27	4.40
1200	3.30	3.45	3.60	3.75	3.90	4.05	4.20	4.35	4.50	4.65	4.80
1300	3.58	3.75	3.90	4.07	4.23	4.39	4.55	4.72	4.88	5.04	5.20
1400	3.85	4.03	4.20	4.38	4.55	4.73	4.90	5.08	5.25	5.43	5.60
1500	4.13	4.32	4.50	4.69	4.88	5.07	5.25	5.44	5.63	5.82	6.00
1600	4.40	4.60	4.80	5.00	5.20	5.40	5.60	5.80	6.00	6.20	6.40
1700	4.68	4.89	5.10	5.32	5.53	5.74	5.95	6.17	6.38	6.59	6.80
1800	4.95	5.18	5.40	5.63	5.85	6.08	6.30	6.53	6.75	6.98	7.20
1900	5.23	5.47	5.70	5.94	6.18	6.42	6.65	6.89	7.12	7.37	7.60

Note—If price per ton is larger than amount given in table result can be secured by combining two amounts which together equal the price per ton used.

Imports of Coal Into Havana, Cuba.

The imports of coal through Havana during the year 1922 aggregated 394,510 long tons, as compared with 447,936 tons in the preceding year, 686,318 tons in 1920, 737,141 tons in 1919, 964,682 tons in 1918, and 947,612 tons in 1917. The falling off in recent years is attributed to the increased use of oil as fuel for locomotives and cane-grinding mills.

The importation of coke into Belgium is now subject to license.

Clean Coal

Throughout the 58 years of The Consolidation Coal Company's history, one steadfast rule has been maintained—that only clean coal shall be shipped to our customers. This tradition is one of the reasons for the growth of this Company which today operates 92 mines with an annual production capacity greater than 15,000,000 tons.

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THE CONSOLIDATION COAL COMPANY

INCORPORATED

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OIL AS MARINE FUEL

Adoption Hastened by High Coal Prices During and Following War.

Below is a translation of part of an article by Professor Hennig, of Dusseldorf, recently appearing in a German paper:

A revolution of a technical nature, whose political and economic effect on the future cannot be overestimated, is at present taking place in the world's shipping. During the last few years, extraordinary progress has been made in the substitution of oil fuel and oil-driven motors for steam power generated by coal.

The revolution seems likely to be more far-reaching in its effects than the last great revolution in shipping, when sailing vessels were replaced by steamships.

When the war broke out oil-driven shipping was only in its infancy. Coal fuel was comparatively cheap and the fuel supply in all the seaports of the world was excellently regulated and secured. There seemed, therefore, no reason for abandoning coal fuel in favor of a fuel which had only been tried in minor and coastal vessels.

The great and long enduring coal shortage of the war and post-war days, however, brought about a "flight from coal" to an extent and with a rapidity which ten years ago would have been deemed impossible. Just as the war gave a new impetus to sailing ships and their construction, so, too, to an incomparably greater extent oil-driven shipping was encouraged by the coal shortage and the high price of coal.

As matters stand today, the steamship, as compared with large vessels driven by oil fuel or oil motors, appears, all things being equal, old-fashioned and is likely to be regarded in the future as out of date.

The extent to which coal is being replaced by oil can be gauged from the fact that there were 2,336 oil fuel burning seagoing vessels of 12,800,000 gross tons in 1920 as against 364 such ships of 1,300,000 tons in 1915.

The price of motor fuel is, it is true, considerably higher than that of coal but that is a secondary matter in view of the great advantage over coal fuel offered by oil fuel and oil motors. The removal of the heavy machinery and the coal makes possible a saving on an average of about 55 per cent of the available cargo space. The more complete using up of the thermal unit in the case of an oil motor compensates to a great extent for the increased cost of the fuel unit.

Coal Consumption of Malta.

Practically all of the coal imported into Malta is used as steamship bunkers, the amount consumed annually for this purpose at present being about 120,000 tons, as compared with about 500,000 tons in pre-war years. Other users in Malta include industrial plants (tramways and railways), with an annual consumption of 2,400 tons; gas works, 5,000 tons; and the army, 4,000 tons. All of the imports come from Great Britain.

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Bituminous Costs.

In transmitting to Congress data relative to investment and profits in the bituminous coal mining industry, the Federal Trade Commission pointed out the desirability of obtaining current information as to the cost of producing coal.

"In transmitting the attached explanatory and statistical material supporting the preliminary report of this commission on investment and profit in soft coal mining, 1916-1921, which was forwarded to you on May 31, 1922, the commission desires to point out its current usefulness in a consideration of bituminous coal prices," says a letter accompanying the data.

"The investment per ton determined in this report may be applied to estimated costs of production at the present time and to present prices whereever information thereon may be available so as to enable buyers of soft coal and the public to get it, roughly, the profit on investment that a given price will yield and so to judge the reasonableness of the price.

"In the absence of exact current information, which the commission, beginning in 1920, planned to get, but which, at the instance of the National Coal Association, it was enjoined from getting, some such rough method of estimating the profit yielded by a given price must be resorted to.

Average Investment Per Ton.

"The information now presented shows for the various mining districts in the United States the average investment per ton for the mining of coal for a large proportion of the bituminous mining operations and these figures are believed to be typical with respect to the investment. This investment as already pointed out in the report to Congress of May 31, 1922, varies widely as between the several districts and, also of course, with respect to different mining operations within the same district.

"With respect to this investment the report shows an average for the United States of $3.12 per ton, and a range with respect to comparatively important districts from less than $1.00 per ton to $8.00 or $9.00 and over per ton. Taking a few of the larger districts for specific illustration the average investment is found to be $4.26 per ton in southwest Pennsylvania district; $3.04 per ton in the central Pennsylvania district; $3.40 per ton in the Kanawha (West Virginia) district; $2.21 per ton in the Kentucky No. 1 district; $1.94 in the Illinois No. 3 district; $2.56 per ton in the Ohio No. 8 district; $1.44 per ton in the Indiana No. 1 district; $1.19 per ton in the Cherokee-Crawford Kansas district; $4.79 per ton in the Colorado domestic district; and $8.32 per ton in the Utah district."

According to a paper recently read, coal was mined in a small way in Iowa in the first half of the nineteenth century. The first record is 400 tons in 1840. Campbell says the original coal supply in Iowa was 29,160,000,000 short tons, from which it appears that there was still available up to the close of 1910, 28,900,000,000 short tons. Since then there has been mined up to and including 1921, 78,399,608 tons.

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DISTRIBUTION OF RETAIL TONNAGE

With Probably Nine Out of Ten Country Dealers Coal Is a Side Line—A Few Thousand Concerns Handle Half the Business.

It is sometimes said that there are between 40 and 50 thousand retail coal dealers in the United States, or at least that number of concerns that sell coal at retail, whether full-fledged coal dealers or otherwise.

In response to an inquiry as to the number in this line the J. B. Sanborn Company informs us that there are 46,800 concerns in the United States and Canada selling coal at retail.

Probably a few more than 40 or 42 thousand would be the appropriate proportion for the United States. This number, our correspondent writes, includes elevators which handle coal during the grain seasons, but not at other times; general stores in the southern states are, one after another, taking up the handling of the little coal used in their town during the winter time, and hardware, lumber and grain concerns using coal as a side line.

This is also exclusive, the company writes, of the vast lot of "snow birds" that there are in the northwestern states. This all means a great many small tonnage concerns and a few statistical allusions will emphasize this fact.

Aggregate Volume of Business.

The high water mark of tonnage sold at retail was probably 107 million, reached in 1917. There was not so much reduction on this class of business as on steam coal, as the fluctuations are less than is commonly supposed, even weather conditions have less effect than is generally supposed, for cold weather in one section has a tendency to offset mild weather in another. Hence we may assume the sub-normal business of 1921 as being 100,000,000 tons of retail business.

There is a great difference between the status of the concerns handling tonnage at retail; more so, perhaps, than is apparent in most other lines of business. A half dozen concerns can be mentioned whose annual tonnage aggregates 10 million tons, and there is another small group that disposes of another 10 million tons or thereabouts. We may count about 200 in that second group of dealers. It is probably safe to say there are that many coal men having an average business of 50 thousand tons or thereabouts per annum.

Another 10 million tons may safely be assigned to a group of about 500, selling an average quantity of 20 thousand tons per annum, for there are in the United States 68 cities with a population in excess of 100 thousand, and while some of these are non-coal consuming places so far as retail trade is concerned—cities like Los Angeles and New Orleans, where the domestic coal business is extremely limited—it is in this group that, very naturally, the larger dealers in coal exclusively will be found.

Yet setting aside 706 does not materially reduce the total number of dealers reported. There would still be about 40 thousand names on the list of coal men and a business of 70 million tons to be handled by them.

1,467 Places with Over 5,000 People.

Dropping beyond this point, any attempt to estimate average tonnages would be very much in the line of guesswork. But it is a matter of record that there

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are 1,467 places in the United States having a population of 5,000 or more, and setting aside the smallest of these and those numerous places where because of climate, gas or oil there is very little coal sold at retail, it is probable that we may set down safely another thousand dealers who sell an average of 10 thousand tons of coal annually, some selling more, some selling less, but in the aggregate accounting for 10 million tons.

The Census Bureau divides cities and other incorporated places into four groups and shows the numbers, based on population, to be as follows:

Group 1.	25,000 or more	287 places
Group 2.	10,000 to 25,000	459 places
Group 4.	5,000 to 10,000	721 places
Group 4.	2,500 to 5,000	1,320 places

Passing beyond the 10,000-ton dealers, all of whom will doubtless be found in groups 1 and 2, we shall probably find 2,000 more concerns whose tonnage will average 5 thousand per annum; thus accounting for 10 million tons or thereabouts. These figures are all approximate, of course, and are used in a very general sense, but the point is that when one gets beyond an aggregate of 3,706 dealers the personnel of the coal trade takes on an uncertain hue.

They are not thoroughly dyed-in-the-wool coal men, but nine times out of ten they have of necessity to deal in other commodities in order to secure the livelihood that a regularly established merchant anticipates making. We have, therefore, a situation of some 50 million tons or so being sold by approximately 3,706 dealers, with all the remaining dealers dividing between them only a corresponding amount of tonnage.

Thousands Average Only Six Tons a Day.

This leaves, therefore, 50 million tons to be sold by something like 38 or 39 thousand dealers, or so-called dealers, giving an average tonnage of about 1,300 to each, and as there are among them some fairly substantial concerns, several hundred—perhaps two or three thousand—doing, probably, well up to three or four thousand tons a year, it is plainly to be seen how very small are some 30 thousand or so of the so-called coal dealers of the country.

Even those who handle the average amount of 1,300 tons a year accredited to this class are doing less than five tons a day; not enough to keep one team busy even on one-ton deliveries.

Probably in nine cases out of ten the coal sold by such concerns, so many thousands in number, is merely a side-line, a subordinate side-line in fact, the least consequential part of a general merchandise business, and many of them are only seasonal dealers, getting in a few cars in fall or winter for prompt sale.

Station Agents Interested.

At a rough calculation, there are about 77,400 railroad stations in the United States and Canada, and it is safe to say that at about half of this number there is someone who sells coal, even if it is only the station agent who places an occasional order for a car or two.

There are about 264,000 miles of railroad in the United States and 39,000 in Canada and, therefore, the number of stations seems to be well calculated, based on a survey of the number of pages devoted to that data by the Official Railway

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Guide, as they well average about two miles apart in the eastern part of the country, about four miles apart in most of the south and west, and something more in the remote and rugged sections.

We think this feature of smallness is the weak point of the whole matter of association work, that the number of concerns dealing in coal exclusively and largely is very small, while there are so many handling it as a side-line; small factors, it is true, yet potential competitors of no slight importance.

It is difficult to get them lined up in association on a cost-paying basis, for should they belong to associations covering all of the lines of goods that they handle, their dues would be a very substantial item in the course of a year's time, and attendance at association meetings and perusal of association literature would take much of their time.

Can't Belong to All.

Association membership in a single instance may not amount to much financially, or make many demands upon one's time, but multiply this by a dozen or so to cover lumber, grain, cement, sewer-pipe, hardware, builders' supplies, ice, agricultural implements, fertilizer, wall-paper, etc., etc., and the factors of expense and time are of considerable consequence and something that the small town merchant has to pay attention to.

Discernment of who's who among the smaller dealers is a difficult thing. Financial ratings do not account for much, as a man may have made a lot of money in the lumber business and take very little interest in coal because of the small tonnage thereof that his trade calls for. On the other hand, some dealers with small tonnage may be new people of an enterprising sort who are giving old established interests a run for their money.

Some concerns doing a small business are located in suburban towns and are thoroughly in touch with city conditions and well up in all the affairs of the day. Others are located in remote places and are satisfied to keep strictly within a self-imposed shell of aloofness.

Before passing judgment on any small-tonnage dealer a careful critic would want to know more about his surrounding circumstances than would perhaps be necessary in the case of a dealer whose purchases were ten times as large, for in the latter case the circumstances of the buyer would be more easily discernible.

In conclusion, therefore, it can be said that making all allowances for the few thousand large dealers, it is still a fact that about half the tonnage finds an outlet through channels that can only be described as ranging from small to picayune.

This dealing in extremely limited quantities has an influence on the trade, undoubtedly, and tends to introduce in certain quarters an element of smallness that one would scarcely expect to find in so great an industry.

Coal Consumption in the Bahamas Negligible.

Coal consumption in the Bahama Islands is negligible. The only regular customers for coal are the hotels, which are open only from January to March, and the Government Light and Power House. These do not consume a total exceeding 1,000 tons per annum. Private houses have no fireplaces and cooking is done over wood or charcoal.

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COOKING AND HEATING BY GAS

Fuel Which Has Absorbed Much of Increase in Domestic Requirements.

A calculation by a prominent gas official indicated that in New York only about 15 per cent of the product is used for lighting, about 60 per cent is used for cooking and about 25 per cent for industrial purposes and heating. These figures may be applied as a good guess to 36,282,000,000 cubic feet of gas manufactured in the past year for use in the Boroughs of Manhattan and the Bronx.

Incidental to the reference to use of gas for heating, it might be mentioned that this is done on quite a large scale in a number of instances, houses being heated all the way through by means of gas because of convenience and regardless of the additional expense.

Several of the branch offices of the gas company are so heated and the large office in 57th street utilizes an ingenious arrangement of rows of burners underneath a steam boiler. Automatic arrangements shut off or turn on various rows of burners, or reduce or increase the pressure thereof as requirements warrant.

It will be seen that this is quite a step beyond the merely auxiliary heating that has sometimes been deemed the chief utility of gas stoves in this part of the country.

The details available show that the gas used for other than lighting purposes is about 30,000,000,000 cubic feet annually for a population of about 3,000,000, or say 10,000 cubic feet per capita. If we apply this proportion to the larger centers of population and make some allowance for climatic conditions in the southern part of the country, it will probably be found that 400,000,000,000 cubic feet of manufactured gas are used for purposes that might be served by coal, and that the equivalent tonnage has been displaced in the last 30 years or thereabouts.

Doubtless the retail coal trade as a whole would be 40% greater were it not for competitive uses of gas.

Welsh Coal Analyses.

To permit comparisons being made with American smokeless coal, the following figures are presented showing the analyses of three different samples of the Cardiff coal designated as Best Admiralty Large:

	Per Cent	Per Cent	Per Cent
Fixed Carbon	81.90	80.80	79.50
Volatile	12.13	13.60	15.11
Ash	4.86	4.55	4.23
Water	1.11	1.05	1.16
	100.00	100.00	100.00

	Per Cent	Per Cent	Per Cent
Sulphur	.79	.89	.98
Calories	82.66	82.76	82.79
B. T. U.	14,879	14,897	14,902
Evaporative Power	15.39	15.41	15.41

The coals coming under the head of Best Admiralty are: Cambrian, Dowlais, Ferndale, Glamorgan (Hoods), Hills Plymouth, Lockets, Naval, Nixons, Ocean, Penrikyber, Standard, Cyfarthfa, and National.

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WEATHER AND FUEL CONSUMPTION

Fluctuations of Temperature Have Marked Influence on Demand for Coal, but Consumption Is Affected Less Than Supposed.

In time of scarcity and in time of an oversupplied market alike there is comment as to the influence of the weather upon the coal trade.

The weather does, of course, have an influence on fuel consumption, but in the midst of the coal burning season it is much less than might be supposed. The principal result in the year's activities depends upon whether we have an early or late fall or an early or late spring, for after all it is the domestic trade that is chiefly influenced by weather conditions.

Careful investigation made a number of years ago indicates that, generally speaking, a difference of two degrees in temperature makes a difference of one per cent in the amount of fuel used on locomotives. Railroad engines, being exposed to the weather without the least protection, probably feel the result of changing temperatures more than any other steam producing plants, and their decreased efficiency in cold weather has always been a matter of concern to traffic officials in busy times. The difference in requirements thus indicated may be taken as a maximum.

Modern Refinements a Factor.

In recent years in particular stationary steam plants have received the very careful attention of engineers with a view to reducing all losses by radiation, leaks and otherwise, and by the measures of insulation that have been taken, the protection of feed water and supply pipes and other such measures, the influence of the weather upon coal consumption has been reduced.

Of course some steam demands are much greater in the winter than in the summer, but the day to day fluctuations during the cold weather are not notable. In fact, it is often stated that the windy days of March, establishing as they do a draft of unusual intensity, have as much influence on coal burning as extremely cold days do.

The principal result, therefore, is felt in the domestic trade in two ways—through the postponement or otherwise of starting up the fires in the fall and through the psychological effect of a cold wave, and particularly of a snowstorm. Any coal that is saved through deferred starting of household fires is, of course, an actual economy, and during the last fall season it is very fortunate for the public that it was possible to save considerable. Every mild day which led to the deferring of the general starting up of fires was equivalent to the saving of 200,000 net tons of the prepared sizes of hard coal.

As to the psychological effect that, in the net result, simply causes a false stimulation to the trade. On a cold, snowy day it seems to the retail dealer that everybody wants coal. When bright, sunny days follow it is difficult for him to move his customary daily tonnage.

The apparent effects of cold weather on the trade are emphasized also by the fact that at the time when demand is stimulated in part by psychologi-

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General Offices: 16 South River Street, Wilkes-Barre, Pa.

cal reasons, as well as by actual use of coal, the delivery of supplies to the dealer's yard is hampered by adverse conditions of transportation by rail and water. These circumstances all increase temporary difficulties for the coal man, and decreased receipts serve to give to cold weather conditions more trade significance than they are probably entitled to.

Chance for Briquettes.

One good feature that constitutes somewhat of a silver lining to the present cloud of difficulty is the increased consideration given to the use of briquettes. It is highly desirable that such products of coal mine waste should be utilized. While coal was cheap and plentiful there was no incentive to utilize them extensively and fortunes have been lost on experimental plants whose production failed to find a market simply because of public indifference.

Now conditions have changed greatly, and not only is it very desirable for the producers to find a better market for their small sizes through the medium of briquettes or otherwise, but it has been made apparent to the public at large that the customary prepared sizes of anthracite must be supplemented by the use of briquettes and other utilization of small coal.

Cost of Running a Locomotive.

One of the most expensive items in railway operation at the present time is the cost of running a locomotive. This problem has come to the front recently as a result of the large number of locomotives which were not repaired because of the shopmen's strike.

The total cost of locomotive operation for a large western railroad for 1920, as reported by one authority, was $74,454,628, and the cost per locomotive owned per annum was $34,029.

The survey showed that of the total sum, $28,789,756 went for fuel; $26,462,086 for repairs; $18,442,173 for wages of the enginemen, firemen and enginehouse employees; $424,917 for lubricants, and other supplies, $335,696.

Of the cost of running a single engine, $13,158 went for fuel; $12,094 for repairs; $8,429 for wages; $194 for lubricants, and $153 for other supplies.

The high cost of fuel has prompted many operating departments of railroads to conduct new experiments in the use of fuel oil as a substitute for coal in the operation of engines, it was learned. This practice has been common in some parts of the West, but in the East the adoption of fuel oil for motive power purposes has been negligible.

It has been calculated that of the tonnage mined 82 pounds out of 2,000 pounds are required to move the coal to market. This, of course, is based on a generalization covering the entire country, long hauls and short hauls, and many of other details of all aggregated together. It is simply an attempt to put in a little more definite form the old saying that "it takes coal to haul coal," and illustrates that any increase in tonnage demand means greater use of coal by the railroads. Something less than five per cent of the total output, it will be seen, is used for coal hauling.

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Cambria County, Pa.

SUPERIOR-DULUTH DOCKS

Storage and Handling Capacity of Facilities at Head of Lakes.

Below is some data showing the storage and handling capacity of coal docks at the Head of the Lakes:

Superior.

Berwind Fuel Co., 700,000 tons bituminous; 1,300 tons per hour.
Carnegie Dock & Fuel Co., Dock No. 1, 800,000 tons bituminous; 600 tons per hour.
Great Lakes Coal & Dock Co., 700,000 tons bituminous; 100,000 tons anthracite; 1,000 tons per hour.
M. A. Hanna Coal & Dock Co., 450,000 tons bituminous; 50,000 tons anthracite; 600 tons per hour.
Lehigh Valley Coal Sales Co., 150,000 tons anthracite; 800 tons per hour.
Inland Coal & Dock Co. (details not available).
Northern Coal & Dock Co., 500,000 tons bituminous; 70,000 tons anthracite; 600 tons per hour.
North Western Fuel Co., Dock No. 1, 1,700,000 tons bituminous; 300,000 tons anthracite; 1,700 tons per hour.
North Western Fuel Co., Dock No. 2, 550,000 tons bituminous; 1,000 tons per hour.
Philadelphia & Reading Coal & Iron Co., 240,000 tons bituminous; 160,000 tons anthracite; 1,000 tons per hour.
Pittsburgh Coal Co., Dock No. 5, 800,000 tons bituminous; 200,000 tons anthracite; 600 tons per hour.
Pursglove Coal & Dock Co., 130,000 tons bituminous; 300 tons per hour.
Reeves Coal & Dock Co., 100,000 tons bituminous; 40,000 tons anthracite; 400 tons per hour.
C. Reiss Coal Co., 750,000 tons bituminous; 90,000 tons anthracite; 900 tons per hour.

Duluth.

Berwind Fuel Co., 500,000 tons bituminous; 1,100 tons per hour.
Carnegie Dock & Fuel Co., Dock No. 2, 130,000 tons anthracite; 300 tons per hour.
Clarkson Coal & Dock Co., 400,000 tons bituminous; 60,000 tons anthracite; 700 tons per hour.
Pittsburgh & Ashland Coal & Dock Co., 445,000 tons bituminous; 800 tons per hour.
North Western Fuel Co., Dock No. 4, 400,000 tons bituminous; 100,000 tons anthracite; 600 tons per hour.
Pittsburgh Coal Co., Dock No. 7, 1,000,000 tons bituminous; 80,000 tons anthracite; 1,000 tons per hour.
Superior Coal & Dock Co., 800,000 tons; 650 tons per hour.
Zenith Furnace Co., 375,000 tons bituminous; 750 tons per hour.

Exports of coal from the Washington Customs District to various places on the Pacific amounted to 11,001 tons during 1922.

MEEKER & CO.

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Sampling Delivered Coal.

In sampling delivered coal the U. S. Bureau of Mines follows a definite procedure. A sample weighing not less than 1,000 pounds is systematically collected by taking equal increments at regular intervals throughout the delivery, while coal is being loaded or unloaded, and crushing and reducing this sample by successive stages to laboratory size.

In using analyses of samples of delivered coal, the reader must recognize that the coal is not always of uniform size, and that the impurities are not uniformly distributed throughout the mass. Some variation in the results obtained are consequently to be expected; if the same mass of coal were sampled a number of times the analyses would not agree absolutely except by chance. It is only when a considerable number of such analyses are available representing a considerable tonnage mined over a period of that time that the average value and range of variation of a particular coal become known with assurance.

With reasonable tolerances, however, for these variations, delivered coal can be sampled accurately enough for all practical purposes. Deliveries from any one mine may vary in quality from time to time because of changes in mining or preparing the coal, and an analysis of deliveries for any one date should not be considered as establishing a permanent standard, for the output may be greatly improved by new methods of mining and preparation, or it may deteriorate through the carelessness of the miner and the operator.

The method of collecting mine samples of coal by the Bureau of Mines involves selecting a representative face of the bed to be sampled; cleaning the face; making a cut across it from roof to floor, and rejecting or including impurities in this cut according to a definite plan as they are included or excluded in mining operations; reducing this gross sample, by crushing and quartering, to about three pounds; and immediately sealing the three-pound sample in an airtight container for shipment to the laboratory.

A Drawback to Use of Canal.

Despite the large expenditures on the reconstruction of the Erie Canal, the route is used to an extremely limited degree and a transportation man of great experience tells us that the most definite reason for this failure to utilize an improvement constructed at great expense is the fact that, while the water in the channel was deepened, many of the bridges along the canal are at the same elevation as before.

Naturally, as the draft of a boat increases, the elevation above water increases also, and the superstructures are larger. Hence it is necessary to have more headroom and a number of changes along the line should be made.

It is a matter that does not involve great expense, and a number of concerns interested in transportation hereabouts would be glad to see such improvement made, in order that when coal-carrying is not on an active basis hereabouts, some of their boats could be put in general service on the canal.

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SAULT CANAL COAL SHIPMENTS

Both Anthracite and Bituminous Movements Show Big Falling Off During Season of 1922.

Official statistics of vessel movements through the Sault Canal in 1921 and 1922 show coal tonnage as follows:

Anthracite.

Month	United States Canal		Canadian Canal		Total	
	1921	1922	1921	1922	1921	1922
April	109,719	5,000	.....	.....	109,719	5,000
May	210,878	.....	3,898	2,100	214,776	2,100
June	247,048	.....	.....	.....	247,048	.....
July	445,754	6,052	.....	.....	445,754	6,052
August	489,142	.....	.....	.....	489,142	.....
September	274,130	10,805	7,000	.....	281,130	10,805
October	278,657	267,744	.....	.....	278,657	267,744
November	159,002	281,746	.....	.....	159,002	281,746
December	30,900	97,000	.....	.....	30,900	97,000
Total	2,245,230	668,347	10,898	2,100	2,256,128	670,447

During the season of navigation the tonnage of anthracite passing through the "Soo" Canal decreased 1,586,334 tons, compared with the movement of 1921.

Bituminous.

Month	United States Canal		Canadian Canal		Total	
	1921	1922	1921	1922	1921	1922
April	259,288	109,000	.....	.....	259,288	109,000
May	2,291,789	202,978	11,580	10	2,303,369	202,988
June	3,009,392	247,542	17,785	.....	3,027,177	247,542
July	2,469,430	160,850	17,560	11,515	2,486,990	172,365
August	1,683,980	184,501	14,088	720	1,698,068	185,221
September	986,308	2,338,405	7,540	15,340	993,848	2,353,748
October	1,203,366	2,678,099	7,490	10,825	1,210,856	2,688,924
November	465,806	2,439,756	8,635	14,980	474,441	2,454,736
December	45,470	368,100	7,520	7,950	52,990	376,050
Total	12,414,829	8,729,231	92,198	61,340	12,507,027	8,790,571

Bituminous tonnage to the Northwest passing through the "Soo" canal during the season of 1922 decreased 3,716,456 tons compared with movement of 1921.

Total shipments of coal via this route during 1922 amounted to 9,468,018 tons compared with 14,763,135 tons in 1921, a decrease of 5,295,127 tons, or 35.2 per cent.

Shipments through this channel during a term of years have been as below:

Year	Tons	Year	Tons	Year	Tons
1911	15,332,876	1915	13,357,058	1919	13,874,951
1912	14,931,594	1916	16,123,119	1920	14,156,259
1913	18,622,938	1917	18,298,853	1921	14,763,135
1914	14,487,221	1918	17,981,610	1922	9,468,018

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Bituminous and Anthracite Coal

Foundry and Furnace Coke

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DICKSON & EDDY

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Anthracite COAL Bituminous

SCRANTON COAL COMPANY
WEST END COAL COMPANY
PRICE-PANCOAST COAL COMPANY

HIGH GRADE STEAM and GAS COALS FOR ALL PURPOSES

BRANCH OFFICES: Buffalo, N. Y. Boston, Mass.

Tonnage, Value and Freight Through "Soo" Canal.

Year.	Total Value (Hard and Soft Coal).	Anthracite, Per Ton.	Bituminous, Per Ton.	Freight Per Ton.	Total Coal.
1887	$4,735,454	*$3.50	*$3.50	$0.90	1,352,987
1888	7,367,644	* 3.50	* 3.50	.70	2,105,041
1889	5,702,190	* 3.50	* 3.50	.47	1,629,997
1890	7,619,238	* 3 50	* 3.50	.45	2,176,925
1891	8,776,362	* 3.50	* 3.50	.43	2,507,532
1892	10,164,931	* 3.50	* 3.50	.41	2,904,266
1893	10,528,420	* 3.50	* 3.50	.40	3,008,120
1894	8,191,917	* 2.93	* 2.93	.40	2,797,184
1895	6,993,351	4.25	2.40	.37	2,574,362
1896	8,452,073	4.75	2.50	.32	3,023,340
1897	9,456,824	5.50	2.60	.30	3,039,172
1898	10,334,461	4.75	2.40	.25	3,776,450
1899	12,854,278	5.70	2.60	.46	3,940,887
1900	14,620,840	5.25	3.00	.44	4,486,977
1901	15,492,226	5.60	2.90	.38	4,593,136
1902	16,570,398	6.25	3.25	.45	4,812,478
1903	24,898,407	5.80	3.15	.53	6,937,633
1904	19,657,221	5.50	2.60	.40	6,454,869
1905	20,706,302	5.60	2.75	.33	6,509,056
1906	25,136,044	5.75	2.50	.35	8,739,630
1907	34,461,584	5.80	2.60	.31	11,400,095
1908	28,868,837	5.47	2.50	.30	9,902,460
1909	29,044,855	5.47	2.50	.31	9,940,026
1910	41,392,801	5.30	2.75	.31	13,513,727
1911	48,552,057	5.85	2.75	.31	15,332,876
1912	49,303,871	6.00	2 85	.30	14,931,594
1913	58,927,341	5.85	2.70	.30	18,622,938
1914	46,173,087	5.85	2.70	.30	14,487,221
1915	42,359,320	5.80	2.70	.30	13,357,058
1916	55,916,681	6.10	3.05	.30	16,123,119
1917	99,271,727	6.50	5.25	.45	18,298,853
1918	94,964,144	8.00	4.90	.48	17,981,610
1919	74,079,978	8.85	4.60	.42½	13,874,951
1920	119,000,000	11.00	8.00	.52	14,156,259
1921	95,000,000	11.50	5.50	.52	14,763,155
1922	70,500,000	10.75	7.20	45	9,461,018

*Average price for Anthracite and Bituminous coal combined.

A committee of the Hazard Coal Operators' Association has been studying the question of installing facilities for sending messages to and from the eastern Kentucky coal fields by wireless telegraphy. Present telegraph and telephone service between the mines and the sales offices is so bad, according to the operators, that it is hard to conduct business satisfactorily. Lexington, Ky., will probably be made the relaying point for messages between Cincinnati and the coal fields.

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